MEDICAL LIBRARY

OCT 29 1948

THIS ISSUE CONTAINS 6,220 COPIES

# TEXAS State Journal of Medicine

OWNED BY THE STATE MEDICAL ASSOCIATION OF TEXAS

ISSUED MONTHLY BY THE BOARD OF TRUSTEES

Editorial Offices, 700 Guadalupe Street, Austin, Texas
Publication Offices, 1114 West Daggett Street, Fort Worth, Texas
Postmaster: Send All Notices on Form 3578-P to 700 Guadalupe Street, Austin, Texas
Entered as Second Class Matter July 1, 1905, at the Postoffice at Fort Worth, Texas, under act of March 3, 1879.
Copyright 1948, by the State Medical Association of Texas

**Vol. XLIV No. 6 Austin, Texas, October, 1948 $3.00 Yearly**

## CONTENTS

**EDITORIALS—** Page

The Interim Session of the American Medical Association ..... 413
Political Medicine ..... 413
The Oklahoma City Clinical Society Conference ..... 414
The Southern Medical Association ..... 415
Membership Dues for 1949 ..... 415
The Dallas Health Museum ..... 416
"Give . . . Give Enough!" ..... 416
The Woman's Auxiliary ..... 416

**Current Editorial Comment**

Early Recognition of Cerebral Palsy ..... 417

**ORIGINAL ARTICLES—**

The Anesthesia Study Commissions. *R. J. Whitacre* ..... 419
Anesthetic Problems of a Doctor Doing General Practice. *Jessie Pryor* ..... 422
The Scope of Plastic Surgery. *Truman G. Blocker* ..... 427
Free Full-Thickness Buried Skin Grafts in the Repair of Hernias. *R. A. Richeson* ..... 430
Fascia-Lata Transplant in Regression of Retrotarsal Fat in Ophthalmosteresis. *W. O. Murphy* ..... 435
Nasal and Postoperative Tonsil and Adenoid Hemorrhage: Prevention and Control. *Charles E. Ball* ..... 437
Treatment of Fractures in General Practice. *L. C. Powell* ..... 440
Diagnosis and Treatment of Protruded Lumbar Intervertebral Disks. *Claude D. Wilson* ..... 445
Congenital Evisceration with Atresia of the Colon. *Robert G. Lemon* and *James N. Walker* ..... 449
Congenital Fibrous Bands at the Anorectal Line; A Possible Etiologic Factor in Colic and Constipation. *J. M. Coleman* ..... 454
Salpingiosis (Endosalpingiosis); Case Report. *Evelyn Gass Powers* and *O. N. Hooker* ..... 457
Reevaluation of the Low Cervical Cesarean Section. *Robert P. McDonald* ..... 460
Foreign Body Reaction to Sutures and Other Materials. *Stuart A. Wallace* and *Major Kenneth L. Brown* ..... 463
The Translocation of Body Fluids in Chronic Disease. *Elliott B. Hay* ..... 467

**MISCELLANEOUS—**

Coming Meetings and Clinics ..... 470
A.M.A. Regional Conference ..... 472
Military Surgeons to Meet ..... 472
"Transparent Man" in Dallas ..... 472
Texas Tuberculosis Association ..... 473
Pediatrics Conference at Medical Branch ..... 473
State Board Examination ..... 473
Warning of Injurious Drugs ..... 473
American Association of Blood Banks ..... 474

**Library Notes—**

Package Service ..... 474
Motion Picture Film Library ..... 475
Book Reviews ..... 475

**News** ..... 477

**Society News** ..... 479

**Auxiliary Notes—**

State Executive Board Meeting ..... 481
Auxiliary News ..... 483

**Deaths** ..... 483

**COMPLETELY UP-TO-DATE!** **A. M. A. Interns' Manual**

W. B. Saunders Company has been selected by the American Medical Association to carry on the publication of this popular Interns' Manual. Saunders does so gladly because they feel that this is the handiest, most truly useful and authoritative little volume of its kind ever written.

The various Councils and Bureaus of the A.M.A. have brought all the data **completely up-to-date.** They have incorporated in this one ready-reference handbook—all the basic facts essential to hospital practice. Specific advice is given on the intern's place in the hospital, the lawful scope of his practice in each state, and the services of the A.M.A.

In concise form the manual covers the latest uses and dosages of 248 proven drugs, clinical data for use in common emergencies, today's standard tests, the diagnosis and treatment of acute poisoning, the technics of physical medicine, and normal and special diets. A number of valuable reference tables are included. Today's intern, resident and general practitioner will do well to keep a copy of this handy book close by for quick and expert advice.

Prepared by Councils and Bureaus of the American Medical Association. Compiled and Edited in the office of the Council on Pharmacy and Chemistry. 201 pages, 4½"x7⅛". $2.25.

**J. A. MAJORS COMPANY**

1301 Tulane Ave., New Orleans 12, La.
Medical Arts Building, Dallas 1, Texas
108 Edgewood Ave., N.E., Atlanta 3, Ga.

When writing advertisers please mention this Journal

# BALYEAT
## HAY FEVER AND ASTHMA CLINIC

*Devoted exclusively to the Diagnosis and Treatment of Allergic Diseases*

··· OSLER BUILDING ···

OKLAHOMA CITY · · · OKLAHOMA

**THE WALLACE SANITARIUM**

Memphis, Tennessee

***For the Diagnosis and Treatment of Nervous and Mental Diseases, Drug Addiction and Alcoholism***

# Texas State Journal of Medicine

President, TATE MILLER, *Dallas*
President-Elect, G. V. BRINDLEY, *Temple*
Treasurer, T. H. THOMASON, *Fort Worth*
Secretary-Editor, HAROLD M. WILLIAMS
Asst. Editor, HARRIET CUNNINGHAM, B. J., M. A.

Board of Trustees
T. C. TERRELL, Chmn., *Fort Worth*
E. A. ROWLEY, Sec'y., *Amarillo*
J. B. MCKNIGHT, *Sanatorium*
M. M. MINTER, *San Antonio*
F. J. L. BLASINGAME, *Wharton*

Editorial Offices, 700 Guadalupe Street, Austin, Texas
Publication Offices, 1114 West Daggett Street, Fort Worth 1, Texas

COUNCILORS

1. RALPH H. HOMAN, *El Paso*
2. R. B. G. COWPER, *Big Spring*
3. H. H. LATSON, *Amarillo*
4. O. N. MAYO, *Brownwood*
5. CARY POINDEXTER, *Crystal City*
6. W. E. WHIGHAM, *McAllen*
7. WILLIAM M. GAMBRELL, *Austin*
8. JAMES H. WOOTEN, JR., *Columbus*
9. H. W. CUMMINGS, JR., *Houston*
10. L. C. POWELL, *Beaumont*
11. J. M. TRAVIS, *Jacksonville*
12. J. WILSON DAVID, *Corsicana*
13. R. G. BAKER, *Fort Worth*
14. C. C. NASH, *Dallas*
15. JOE D. NICHOLS, *Atlanta*

**Vol. XLIV** **October, 1948** **No. 6**

*DEVOTED TO THE INTERESTS OF THE MEDICAL PROFESSION AND PUBLIC HEALTH IN TEXAS*

**The Interim Session of the American Medical Association,** the first national Medical Public Relations Conference, and the annual Conference of Secretaries and Editors will be held in St. Louis on successive days the latter part of November and first part of December.

Planned especially for the general practitioner, the interim session, November 30-December 3, will offer lectures by nationally known medical leaders on such subjects as diabetes, heart disease, cancer, poliomyelitis, obstetrics, pediatrics, dermatology, genitourinary conditions, hypertension, anesthesia, tuberculosis, jaundice, laboratory diagnosis, roentgen-ray diagnosis, and physical medicine as applied to the treatment of arthritis—subjects which are of most frequent concern to the general practitioner. Clinical conferences, demonstrations, scientific exhibits, technical exhibits, and entertainment have been planned for visiting physicians. One feature of the session will be the awarding of the second annual general practitioner medal. Most of these activities as well as meetings of the House of Delegates will take place in the St. Louis Auditorium.

Immediately preceding the interim session, November 28-29, the annual Conference of Secretaries and Editors, held heretofore at the American Medical Association headquarters in Chicago, will be held. Problems of mutual concern to the secretaries of state medical associations and editors of state medical journals will be discussed.

A Medical Public Relations Conference nationwide in scope will be held under auspices of the American Medical Association for the first time on November 27. The problem of creating a favorable impression on the public and the necessity for so doing have been brought forcibly before the medical profession in recent years. This conference is an attempt to give directors of public relations, chairmen of public relations committees of state associations, and executive secretaries charged with public relations responsibilities an opportunity to exchange ideas and develop concerted action.

The State Medical Association of Texas will be officially represented at each of the three meetings. However, the interim session especially is of such nature that many physicians will wish to attend even though not in an official capacity. The fact that the session is being held in a place as accessible to Texas as St. Louis should mean an increased attendance from this state.

A registration form which enables physicians to save time by securing a registration card in advance is appearing in *The Journal of the American Medical Association* every other week, and a convenient blank for making hotel reservations is also printed in *The Journal.* All hotel reservations must be cleared through the Chairman, Subcommittee on Hotels, American Medical Association, Hotel Reservation Bureau, 1420 Syndicate Trust Building, St. Louis 1, and should be received before November 9.

**Political Medicine.**—The story of the Wagner-Murray-Dingell bills and all of the proposals for compulsory health insurance—political medicine—in the United States are

well known to the physicians of Texas. These maneuvers need not be reviewed at this time. The latest tactic, however, should be made crystal clear to every member of the profession. Last January the Federal Security Administration prepared a letter for the signature of the President requesting Oscar Ewing, the Federal Security Administrator, to prepare a ten year health program for the United States. In order to prepare a backdrop of acceptability, a so-called National Health Assembly was called for May 1 in Washington, D. C. This so-called National Health Assembly in its original executive committee contained the name of only one physician—no dentist, no nurse, no hospital administrator. Of the twenty-four members named to that executive committee, seventeen had previously espoused the cause of compulsory health insurance for the United States. This National Health Assembly was nothing more than a political move which was to serve as a forum for the further propaganda efforts on the part of those who would collectivize all the activities not only of physicians and dentists but of all the people of the United States.

The hearings on the last Wagner-Murray-Dingell bill, S. 1320, and the Taft bill, S. 545, forcibly brought home the fact that the determined little group of socializers would stop at nothing. Dr. Maurice Friedman of Washington, D. C., in his testimony clearly pointed out that the much used "draft statistics" were deliberately maneuvered to prove that America was "falling apart at the seams" on the health issue. This testimony led the Brookings Institute of Washington, D. C., to undertake an independent study of the compulsory health insurance issue. The fifteen conclusions of the Brookings Institute clearly pointed out that the statistics which have been used in the past to prove poor health in the United States have been unreliable. The Brookings conclusions declared:

"The so-called draft statistics . . . have been widely used to show bad health among the American people and the need for revolutionary changes in arrangements for medical care of individuals; they are unreliable as a measure of the health of the Nation and cannot be used to show the extent of the medical needs of the country as a whole.

"Probably no great nation in the world has among its white population better health than prevails in the United States."

The Brookings report further stated:

"The problem of eliminating politics from Government administration is extremely difficult. It does not seem probable that politics could be eliminated from medical care supplied under a governmental system."

The official Senate hearings closed with a joint resolution, S. Res. 249, in which it was stated that before any action could be taken it was evident that further study was needed.

In spite of this resolution, on September 2, Oscar Ewing issued his ten year health program for America entitled "The Nation's Health—A Ten Year Program." This 186 page volume was apparently prepared after the May meeting of the National Health Assembly and presumably after consideration and consultation with the 700 invited delegates to the National Health Assembly. It seems much more likely, however, when all the facts are considered, that the Ewing report was practically complete even before the National Health Assembly was held. The method of recommending little health assemblies all over the country now would lead to the belief that this new technique on the part of the supporters of political medicine needs careful watching.

The Texas Physicians Committee is a spirited and independent group of physicians in Texas, cooperating with the National Physicians Committee, and has been the watch-dog on this issue for a period of almost ten years. The fight has been successful, but the new threat in this new technique warrants the support of every Texas physician who loves independent and free practice and who wishes to guard it against those who would not only control and dictate to the medical profession but also control and dictate to every citizen of the United States.

**The Oklahoma City Clinical Society Conference,** offering lectures and discussions by seventeen distinguished guests, will be held October 25-28 in Oklahoma City. The general assemblies, postgraduate symposiums, and round-table luncheons which have become an established part of the clinical conference during its previous seventeen years of activity will again be held. A clinical-pathological conference has also been planned. In addition, the Oklahoma City Chamber of Commerce will honor the Oklahoma City Clinical Society and its visiting members and their families with a dinner party; the annual stag smoker will be held; and a dinner honoring Dr. Morris Fishbein, Chicago, editor of *The Journal of the American Medical Association,* and associate members of the clinical society will be given with the Oklahoma County Medical Society as host. All of these activities are included in the registration fee of $15.

The guest lecturers who will participate in the conference include the following:

DR. J. W. CONN, associate professor of internal

medicine, University of Michigan School of Medicine, Ann Arbor (medicine).

DR. KATHERINE DODD, associate professor of pediatrics, University of Cincinnati School of Medicine, Cincinnati (pediatrics).

DR. JOHN G. DOWNING, professor of dermatology, Tufts College Medical School and Boston University School of Medicine, Boston (dermatology).

DR. LAWRENCE S. FALLIS, special instructor in surgery and surgical anatomy, Wayne University College of Medicine, Detroit (surgery).

DR. ARTHUR B. HUNT, associate professor of obstetrics and gynecology, University of Minnesota Graduate School, Mayo Foundation, Rochester, Minn. (obstetrics).

DR. R. H. KAMPMEIER, associate professor of medicine, Vanderbilt University School of Medicine, Nashville (medicine).

DR. FRANK R. LOCH, professor of obstetrics and gynecology, Bowman Gray School of Medicine, Winston-Salem, N. C. (gynecology).

DR. WILLIAM P. LONGMIRE, associate professor of surgery, Johns Hopkins University School of Medicine, Baltimore (surgery).

DR. MORRIS FISHBEIN, editor, *The Journal of the American Medical Association*, Chicago.

DR. TRACY O. POWELL, associate clinical professor of urology, College of Medical Evangelists, Los Angeles (urology).

DR. DAVID G. PUGH, University of Minnesota Graduate School, Mayo Foundation, Rochester, Minn. (roentgenology).

DR. HAROLD G. SCHEIE, assistant professor of ophthalmology, University of Pennsylvania Medical and Graduate School, Philadelphia (ophthalmology).

DR. ALLEN F. VOSHELL, professor of orthopedic surgery, University of Maryland School of Medicine, Baltimore (orthopedics).

DR. THEODORE E. WALSH, professor of otolaryngology, Washington University School of Medicine, St. Louis (otolaryngology).

DR. OWEN W. WANGENSTEEN, professor of surgery, University of Minnesota School of Medicine, Minneapolis (surgery).

DR. THEODORE A. WATTERS, senior visiting neuropsychiatrist, DePaul Sanatorium, New Orleans (neurology).

DR. JOHN B. YOUMANS, dean and professor of medicine, College of Medicine, University of Illinois, Chicago (medicine).

Details concerning the Oklahoma conference, which long ago created for itself an enviable position among postgraduate medical conferences in this region, may be secured from the executive secretary of the Oklahoma City Clinical Society, 512 Medical Arts Building, Oklahoma City.

**The Southern Medical Association** will hold its annual meeting October 25-28 in Miami, utilizing the convention facilities recently made available at Dinner Key, the airbase formerly used by Pan American Airways. The convention hall made by joining two hangars to provide space for 10,000 persons will be headquarters for the convention, and all section meetings and scientific, technical, hobby, and motion picture exhibits, will be housed there. Evening general sessions will be held at the Municipal Auditorium.

The first day of the convention will be devoted to a conjoint meeting with the American College of Chest Physicians, Southern Chapter and to "Miami Day," for which the local profession will provide a clinical program. Each of the twenty-one sections of the association will have a half-day program during succeeding days. One afternoon has been left open so that visitors may participate in sporting events or go sightseeing. Following the meeting, tours to Havana and Nassau will be conducted under auspices of the association for its members and guests.

Members of the State Medical Association of Texas are eligible for membership in the Southern Medical Association upon application and payment of $5 dues, which also entitles the physician to a subscription to the *Journal of the Southern Medical Association.* Applications for membership and requests for detailed information about the convention should be sent to the association office in the Empire Building, Birmingham 3, Ala.

The 1948 convention with the Dade County (Florida) Medical Association as host promises a medical program of value plus the opportunity to enjoy the vacation attractions of Florida, Cuba, and the Bahamas. For physicians who have stayed in their offices during the summer months and now feel the need of scientific stimulation and a relaxing vacation, the Southern Medical Association offers the answer.

**Membership Dues for 1949** are due January 1 and members who have not paid by that date will be considered delinquent. To be sure that there is no lapse in membership and to assist the central office staff in handling the dues most effectively, county medical society secretaries are urgently requested to begin now to collect next year's dues from the members of their societies and to forward the dues to the central office promptly.

It should be emphasized that the House of Delegates meeting in Houston last April authorized the collection of $35 per member for 1949, an increase in annual dues of $15. The necessity for additional income from dues was brought about by the general rise in prices which has increased routine operating costs; by the passage of resolutions calling for the removal of the central offices from Fort Worth to Austin and the erection of a suitable building; by the decision of the House to contribute $1 from the dues of each member to the work of the Woman's Auxil-

iary; and by the growing importance of the legislative and public relations programs of the Association. As a matter of fact, in setting the dues at $35, the House of Delegates recognized that the income to be derived therefrom might still be insufficient to carry on the program of work, and the Board of Trustees was requested to keep the matter in mind, study the situation, and make further recommendations to the House of Delegates if it appeared necessary to increase the dues still further.

As always, checks to cover the payment of dues should be made in favor of the State Medical Association of Texas and sent to the Secretary, together with a list of the members for whom payment is being made.

Again, it is urged that payment of 1949 dues be made now so as to avoid confusion or lapse in membership benefits.

**The Dallas Health Museum** has become established as an important medium of health education for the laymen of Texas. As it observes its second anniversary this month, it would be well for the medical profession of Texas to become better acquainted with the program carried on in the little white building in Fair Park, Dallas, and officials of the museum have given the doctors of the state a hearty invitation to visit during the State Fair of Texas, October 9-24, which is annually a period of great activity for the Health Museum.

The year round program of the museum is described in some detail in the September issue of the JOURNAL (page 403), and additional information about the election of officers and the current special exhibit, including a picture of the "Transparent Man," appears on page 472 of this issue.

Suffice it to point out here that the Dallas Health Museum, following in the steps of the Cleveland Health Museum; the American Museum of Health, New York; and a few other groups in this country and abroad, is pioneering in bringing to the public authentic medical and health facts in an entertaining way, making full use of modern visual teaching methods. The service which the museum is equipped and eager to offer to classes, industrial concerns, and other interested groups, as well as to individuals curious about their bodies and how to keep them in good condition, is a resource with which Texas physicians should be familiar. If they cannot visit the museum in person, museum officials will welcome inquiries about their activities from physicians who wish to recommend the museum to their patients and organizations within their communities.

**"Give . . . Give Enough!"**—Once more the season of the Red Feather is at hand and Community Chest campaigns are being carried on in cities and towns across the nation. Texas physicians, too, are being called on to contribute to their local Community Chest funds.

Perhaps it is unnecessary to explain to physicians just where the Community Chest money goes — they know about the family service, aid to handicapped, homes for aged, day nurseries, maternity homes, YMCA, YWCA, Boy Scouts, Girl Scouts, and all the rest. Perhaps, however, they need to be reminded that there are a great many services, operating throughout the year, which are asking for help through this single fund-raising campaign. Such a united effort brings order out of a chaos of competitive and sometimes duplicating appeals, reduces campaign and administration costs, and assures effective use of and accounting of funds. It means, though, that "out-of-pocket" contributions are seldom enough to cover the need and that pledges to be paid throughout the year will be required to reach the goals which local committees have set after much study and planning.

This year, at the request of Secretary of Defense James Forrestal and a Civilian Advisory Committee, the Community Chest is including in its budget sufficient funds to finance a reactivated USO to help solve the problems being created by an enlarged military force. For this program alone it is obvious that many dollars will be needed, and this service is only one of many included in each Community Chest appeal.

Members of the State Medical Association know what the Community Chest is, know what it does, know that contributions must be generous. They will give, and give enough.

**The Woman's Auxiliary*** to the State Medical Association of Texas as well as that of every other state medical association in the nation was given special recognition at the annual session of the A.M.A. held at Chicago in June, 1948, through the presentation to the House of Delegates of the following resolution:

*Whereas*, Our local, state, and national woman's auxiliaries have become an indispensable adjunct of organized medicine; and

*Whereas*, The local, state, and national auxiliaries are especially effective as agencies for furthering

*EDITOR'S NOTE: This is the second of a series of articles on the Transactions of the House of Delegates of the American Medical Association and activities of the various councils, committees, and bureaus of the A.M.A. which are destined to exert an influence on the practice of medicine and the improvement of the public health of this nation.

the education of the public concerning the aims and accomplishments of scientific medicine; and

*Whereas,* Their maximum effectiveness requires participation by the wife of every member and sufficient funds to enable them to carry on their essential activities; therefore be it

*Resolved,* That each constituent state medical association be urged to budget sufficient funds to defray the cost of the activities of its auxiliary and to pay the annual dues of the national auxiliary, thus making the wife of every member automatically a member of the state and national auxiliaries and eliminating the collection of state and national auxiliary dues from individual auxiliary members.

This resolution, presented by the Oregon State Medical Society, was approved by the House of Delegates and referred to the various state medical associations with the recommendation that each state pass favorably upon it.

It will be recalled that the State Medical Association of Texas, at its annual session at Houston in April, 1948, passed a resolution in keeping with the intent of the A.M.A.'s action, setting forth the work of the Woman's Auxiliary and pointing out that the women have been seriously handicapped because of inadequate funds to further their work. It recommended that the House of Delegates request the Board of Trustees to set aside $1 per capita annually from dues for the use of the Woman's Auxiliary. The Trustees acted favorably on this request and approximately $5,500 will therefore be allocated to the Auxiliary in 1949.

Although the resolution passed by the State Association prior to the action of the A.M.A. was in spirit with the intent of the A.M.A. resolution it does not completely satisfy the recommendation as set forth by the national group. This matter will be brought to the attention of the House of Delegates at its meeting during the annual session in San Antonio next May.

The value of the Woman's Auxiliary as expressed in both these resolutions is in no way exaggerated. The Auxiliary in Texas each year carries on a purposeful program of activities which interlocks with the program of the State Medical Association, enhancing and supplementing it. Plans for the 1948-1949 season were discussed by the Executive Board in Dallas on September 22, and a brief report of that meeting is published on page 481 of this JOURNAL. Some idea of the scope of the Auxiliary program can be gained by reading those minutes. Certainly the Woman's Auxiliary should receive the recognition and assistance, financial and otherwise, which it so rightly deserves.

## CURRENT EDITORIAL COMMENT*

**Early Recognition of Cerebral Palsy.**—The early recognition of cerebral palsy is of the utmost importance. It is here that the general practitioner and pediatrician can be of the greatest help. Early recognition assures early treatment, and, in many cases, the prevention of deformity rather than the more difficult correction of it.

Early recognition is based both on the history and the physical examination. The history should include prenatal and natal factors as well as the developmental history of the baby. Any abnormal condition during pregnancy such as threatened abortion or virus diseases early in the first trimester, falls, or severe anemia should be noted. A difficult labor with attendant trouble to the baby such as the need for resuscitation or any indication of anoxia should put the doctor on guard. One of the most significant and constant findings is a feeding problem which is actually a mechanical difficulty with sucking. This difficulty has been noted in 90 per cent of the children with cerebral palsy. Next is the failure to develop in the motor, emotional, and adaptive fields according to the chronologic age.

The physical findings will vary with the type of cerebral palsy: athetoid, spastic, ataxic, tremor, and rigidity.

The lesion, or damage, in the *athetoid* type is to the basal ganglia. As a result there is loss of control of associated involuntary acts. There are two characteristics of athetosis: purposeless motion and an unconscious effort by the patient to get a part of the body into a distorted position. The athetoid patient from 3 to 6 months of age usually lies with the legs in extension, the arms abducted, the thumbs adducted, and he performs a certain amount of purposeless motion of the fingers and hands, toes and feet. There may or may not be an accompanying involvement of the eyes. If present, it is manifested as strabismus of one or both eyes. The reflexes are normal.

Reciprocation is normally developed at 3 months. This may be delayed in the athetoid patient, though it is a much more characteristic finding in the spastic. There are two main classifications of athetosis: nontension and tension. Usually tension is not present in little babies except in the extremely severe cases.

There is general delay in accomplishment

*This department of the JOURNAL presents editorial comments on current items pertaining to the science, art and practice of medicine, contributed by members of the State Medical Association and scientists closely associated with the medical profession of Texas. Invitation is hereby extended to any member of the State Medical Association of Texas to submit such discussions for this department. The discussions should not be more than 500 words in length.

in the motor field: delay in holding the head up, which is normally developed by 3 months, sitting alone, normally developed by 5 to 7 months; and crawling, which is normally developed from 6 to 10 months. There is nearly always a disturbance of the normal sucking reflex so that feeding is difficult.

The history of jaundice or anoxia is important in the athetoid patient. Many cases of athetoid palsy in little babies are so mild that the diagnosis would be missed early without this history, and that of a moderate slowness in development.

In the *spastic* patient the damage is to the motor cortex so that the physical findings are those commensurate with a lesion of the pyramidal tracts. The examination of the spastic child will depend upon the extent of the involvement. The extent may vary from a monoplegia to a quadriplegia, and the degree of involvement may vary from mild to severe. When the legs are involved there will be a delay in reciprocal movements. The reflexes are hyperactive. There is generally a positive Babinski sign, positive ankle clonus, and absent cremasteric and abdominal reflexes. Most characteristic of spastic palsy is the presence of the stretch reflex in the involved extremities, which is the snap back or recoil of the spastic muscle when stretched.

In *ataxia* the damage is to the cerebellum and to its efferent and afferent pathways. There is a generalized hypotonus. The reflexes are diminished and there are no pathologic reflexes. Nystagmus is found in a large percentage of the cases. There is marked delay in accomplishment.

The history in ataxia is informative. These babies prefer to be left alone. They do not like to be picked up or carried or to ride in a car. They, too, present a feeding problem, partly due to inability to control the tongue and partly due to the hypotonus.

*Tremor* and *rigidity*, usually found together, are usually of postnatal and postinfectious etiology and thus do not constitute a major problem in early diagnosis. If the cause is birth trauma, it is severe, the lesions are diffuse, and the clinical picture is not difficult to recognize. On physical examination there will be found hyperactive reflexes in the involved extremities with the pathologic reflexes of pyramidal tract involvement. The damage to the brain may vary in degree and extent, and because of the diffuseness of the lesions there is a higher percentage of mental impairment in these two types.

Cerebral palsy is widespread. Seven babies with this condition are born per 100,000 of population per year. Of this 7, 1 will die in infancy and 2 will be feeble minded, leaving 4 treatable and educable cases. For any community the constant case load can be determined. Early diagnosis of these cases is important to the babies themselves, to the parents, and to the physician, who can refer them to a treatment center for early therapy. Early treatment assures the maximum adjustment of these children to a complex social and economic world.

Therefore, physicians should endeavor to make as early a diagnosis of cerebral palsy as possible. When a case is diagnosed, the family must be helped to accept their problem and be directed to the proper centers for treatment where, through education of the parents as well as the children, they can be taught to help the child to do things at the proper age, things which the cerebral palsied child cannot do automatically or without help.

MARGARET WATKINS, M. D.,
Chairman, Medical Advisory Board,
Dallas Treatment Center for
Cerebral Palsied Children,
Dallas, Texas.

3629 Fairmount Street.

## TRANSFUSIONS FOR HEMOPHILIA

Blood transfusions are effective in controlling hemophilia over long periods of time, report two researchers from the Medical Research Laboratories, Beth Israel Hospital and the Department of Medicine, Harvard Medical School, Boston.

Writing in the September 18 issue of *The Journal of the American Medical Association*, Benjamin Alexander, M. D., and Greta Landwehr, B. S., say that "observations on patients treated over a period of 10 to 20 months indicate that this approach provides amelioration of the bleeding tendency." Four patients with the disease were given blood plasma three to four times weekly by the researchers. The blood transfusions were always followed by a drop to normal or nearly normal in the time required for the patients' blood to clot. Two of the patients treated who had not been able to take part in active sports played baseball and basketball after receiving blood plasma.

Of the 10 reactions which the researchers observed during the study, only 4 were moderately severe or severe with symptoms of chills, drop in blood pressure, and headache. This incidence of reactions was only slightly more than 1 per cent, the researchers say. One patient developed jaundice, probably from the transfusions.

Blood plasma is effective against hemophilia only as long as transfusions continue to be given, and the treatment does not cure the underlying condition of the disease, the article emphasizes. Yet this treatment is the first reported which is effective in controlling hemophilia over a long period of time, the researchers point out.

---

For the school year 1948-1949 the budgets of the medical schools and basic medical science schools in the United States total $51,000,000, an increase of $8,000,000 over the total for the year 1947-1948.—Report of Council on Medical Education and Hospitals, J.A.M.A., Sept. 3, 1948.

# ORIGINAL ARTICLES

## THE ANESTHESIA STUDY COMMISSIONS

R. J. WHITACRE, M. D.
CLEVELAND, OHIO

As every surgeon knows, there are few situations in medicine in which the factors of second-to-second judgment and second-to-second skill are so important to the patient's immediate welfare—and only too often to his life—as they are in the management of anesthesia during the surgical period. Nevertheless, as probably most surgeons realize, there are few areas in medicine where opinion is so much the rule, or where opinions on correct practice are so divergent, or where there is so much inescapable recourse to empiricism as in the management of anesthesia during the critical surgical period.

There are a number of special reasons, both historic and medical, why such a situation should exist today in anesthesiology. As I see it, the pertinent substance of all the reasons can be summed up in a single honest statement. The anomaly exists because, despite the many notable and even remarkable advances made recently in the specialty of anesthesiology, the information, both quantitative and qualitative, necessary to establish objective and tested clinical criteria for the correct management of anesthesia is not available.

Anesthesiologists need considerably more information than we have, and on a broad base, to establish a comprehensive physiology of anesthesia. Such a physiology is the foundation for the positive methods of diagnosis we must develop to avoid or to prevent anesthetic complications with any consistency. We also need a great deal of now nonexistent information for a more positive working symptomatology of anesthetic complications. I am sure that in view of the intricate and often little understood effects of many anesthetic drugs we cannot possibly have such a physiology, or such a symptomatology, without an adequate pathology of anesthesia.

A pathology of anesthesia is the cornerstone of the structure of scientific information needed to overcome many of the present deficiencies of anesthesiology. Yet it is precisely in this key field of pathology—and after a century of anesthesia—that the paucity of information of value to anesthesia is most glaring.

Equally serious is a failure to appreciate the pharmacology of anesthesia. Anesthetic drugs are without exception potentially lethal, and it is common clinical practice to use them in near lethal concentrations. While these facts are well known, it is still the set habit of many institutions to use these drugs as if they effected only a superficial and transient alteration of the physiologic and metabolic processes of the body. This attitude toward the pharmacology of anesthesia is stubbornly sustained in the face of overwhelming evidence in every operating room that damaging and even irreversible physiologic and metabolic reactions do take place under anesthesia. These reactions, and their consequences, are accepted in too many cases with a sort of statistical fatalism. Often no real investigations are made where fatalities occur, either into the nature and causes of the damage to the patient's tissues and vital organs or into the possible causes of the deaths. As a consequence, the role of the anesthesia either in the damage done or in the fatalities occurring is left largely unknown.

These effects due to anesthesia occur infrequently enough in each surgeon's practice to dull somewhat his sense of responsibility, and they are often shrugged off as being expected rather than preventable complications. This is in no way intended to be critical of present day anesthesia practices, because all physicians appreciate the tremendous advances that have been made in the past decade in this branch of medicine. It is with a thought toward the future standards of safety that this critical analysis is being presented.

The logical first step in solving this problem is to compile accurate information and to study more carefully the complications and deaths that occur during anesthesia. While the information needed is within reach, for obvious institutional reasons it is not going to be had just for the reaching. No one individual or institution can have sufficient experience with all anesthetic methods and drugs in a reasonable period of time to carry out such an investigation. It therefore must be achieved through the combined efforts of many institutions. The practical approach would be to place this study on a community basis where frequent meetings could be held. It was to meet the immediate need for establishing the habit of routine investigation into the causes of anesthetic deaths that the anesthesiologists of this country took action to set up what have now become generally known as the Anesthesia Study Commissions.

Let us consider the problem of an anes-

From the Department of Anesthesiology, Huron Road Hospital. Read before the Section on Surgery, State Medical Association of Texas, Annual Session, Houston, April 27, 1948.

thetic death. Improper sedation, an overdose of the anesthetic agent, too little oxygen in the inspired atmosphere, inadequate pulmonary ventilation, reduction of the circulation time, or an inadequate amount of circulating hemoglobin can each, for different reasons but with the same possibly serious results, produce hypoxia in the patient. The relaxation of the soft tissues in the throat, or slight and perhaps unnoticed vomiting, as well as other factors can cause or seriously aggravate an already existing hypoxia.

Even a relatively mild hypoxia, if permitted to become chronic, can, and too often does, bring on complications that end fatally. Often hypoxia contributes to the production of surgical shock or even primary cardiac failure. What is the therapy indicated? Moments are precious. Each case must be individualized. In order to do this, the anesthesiologist must have knowledge and judgment which can be gained only by thorough examination of all phases of many similar cases. Unless investigations of operating room complications are made a routine procedure and are open to discussion, the clinician has no way of improving his judgment and skill to any degree except by his own experience. Worse, the interns and residents about him run the danger of assimilating and perpetuating his mistakes.

I am not referring primarily to fatalities among poor risk cases, or in major surgery. There is too much daily evidence of fatalities among good risk patients, undergoing so-called minor operations, caused by complications which originated with bad management of the anesthesia. The following case is an illustration.

CASE REPORT

A healthy young man was premedicated with nembutal grains 3, morphine sulfate grain .25, and scopolamine grain .01 prior to a hemorrhoidectomy. A caudal anesthesia was administered with the patient in the prone position. Shortly after the surgery was started, the patient became restless, the blood pressure fell to 70/50, and the pulse rate dropped from 100 to 46. This state of affairs continued for twenty-five minutes because, as it was stated, "he did not seem to get any worse." Finally, an attempt was made to administer oxygen, but the condition of the patient did not improve. Shortly after this the blood pressure could not be obtained, respirations ceased, and no heart action could be detected. At this point it was deemed necessary to interrupt the surgical procedure and turn the patient over on his back. After injection of various stimulants the circulation gradually improved, but the patient did not regain consciousness. Tetanic muscular contractions developed, and the patient died twelve hours postoperatively.

The choice of preoperative medication, the selection of anesthesia, and the position of the patient in this case are all factors that might be criticized, but, in spite of them, with proper management the fatal outcome probably could have been avoided. This patient was neglected because the anesthetist did not properly interpret the signs. No effective treatment was instituted until complete circulatory and respiratory failure had occurred. By this time, the damage due to hypoxia was irreversible. The fault rested not with the drug or the technique but with the anesthetic management.

When a new anesthetic drug appears, the dangers that drug may hold for certain types of patients, or when used with certain techniques or in certain balances, may not become apparent during the first 100 cases, or even the first 500 cases. Suddenly there is a fatality. Such fatalities, caused by the same drug, may have already occurred in some hospitals, but because investigations of operating room deaths were not made in these hospitals, the role of the drug remains unknown. Without an investigation, the new fatality will add nothing to our knowledge. Working in the dark, all the clinician can do is guess until there is a sufficient accumulation of statistical evidence—meaning a large and wholly unnecessary toll of lives—to make him suspicious of that new drug. To realize the importance of this, one has only to wonder how long it would take even today to evaluate chloroform if it were to be introduced for the first time as an anesthetic agent.

I have tried to give background to the important scientific justification as well as the immediate clinical urgency for the work undertaken by Anesthesia Study Commissions. It is worth while to point out that there is the problem of overcoming institutional and professional fears over reporting operating room deaths. Having official commissions made up of men well known in the local community to handle the materials was expected to make it easier, and it has made it easier to cope with this problem. There was also the recognized need for official leadership in each community to inculcate the habits of consistent investigation and reporting of anesthesia deaths among the anesthesiologists. In some communities, as in Philadelphia and Cleveland, these commissions have done the additionally important job of getting both surgeons and internists, as well as pathologists, to participate in the discussions and analyses of cases.

There is another point that requires clarification. The purpose of these commissions is to compile and disseminate information on operating room deaths and their causes as related to the anesthesia. They are not interested in general pathology, or in fixing

and analyzing the causes of operating room deaths as such. Their investigations, discussions, and reporting are strictly limited to the anesthesia.

The need for these study commissions was recognized officially by the medical profession when the House of Delegates of the American Medical Association passed a resolution, in 1944, urging all county and state medical societies, as well as all other medical societies, to set up anesthesia study commissions. It was stressed at the time that the need for such studies was particularly acute because of the many new methods and the large number of new drugs that had been introduced into anesthesia.

The resolution could have been given much broader justification, for the fact was that, regardless of whether the drugs and methods were new or old, physicians were totally without the means for gathering and disseminating reliable information on the incidence and problems of mortality resulting directly or indirectly from the anesthesia.

Professional anesthesiologists had been active for a long time in stimulating an interest in the Anesthesia Study Commissions. In 1935, at the suggestion of Dr. Henry S. Ruth, the Philadelphia County Medical Society set up the country's first Anesthesia Study Commission. The Ohio Society of Anesthesiologists established such a commission in 1941. A Committee on Anesthesia Mortality was set up by the American Society of Anesthesiologists, Inc., in 1943.

The resolution passed by the American Medical Association drew wide attention to the problem and stimulated the formation of new commissions. In 1945, we organized the Cleveland Anesthesia Study Commission. The Chicago Society and the New England Society of Anesthesiologists have recently developed similar groups. Yesterday at a meeting of the Texas Society of Anesthesiologists a committee on mortality and statistics was established. Undoubtedly, others have been formed or are in the process of being organized.

## PROCEDURE

The state and national commissions conduct their business by mail. The members mail in their individual reports, and the commission in turn sends back the compiled materials by mail. While this method has been successful, it holds certain inherent disadvantages. For that reason there has been a tendency to form local study commissions, where the members meet face to face and freely discuss their problems. Cases can be analyzed while still fresh to the memory. Surgeons and internists can be induced to join the discussions.

In these commissions, reports of fatalities occurring during or within twenty-four hours after surgical operations are submitted to the chairman of the commission, who in turn presents the cases before the entire group without reference to the physician or institutions involved. The cases are discussed openly by the members of the commission and classified as preventable or nonpreventable. Preventable deaths are further classified as to whether they resulted from poor selection of the anesthetic agent, faulty management during the anesthetic period, or inadequate resuscitative measures.

The work done so far by these commissions, while necessarily sketchy, has revealed facts about operating room deaths that are of critical importance to both surgery and anesthesiology.

In the Philadelphia area, of 307 operating room fatalities studied,[2] the commission reported that 144, or no less than 47 per cent of the total, had to be classified as preventable deaths caused by faulty management of the anesthesia. On the other hand, the commission had to say that it could classify only 38 per cent of the 307 fatalities as having been clearly nonpreventable from the viewpoint of the anesthesia.

In Cleveland, we found that about 50 per cent of the operating room fatalities that came to the attention of the Anesthesia Study Commission had to be classified as preventable and the causes of these preventable deaths laid to bad anesthesia.

In the District of Columbia, a study[1] of 47 operating room deaths, covering a group of 10 hospitals over a period of two years, revealed that no less than 39 of the 47 deaths, or 83 per cent, were preventable and were caused by faulty management of the anesthesia.

Characteristically, several errors, rather than one, were found to have figured in most of these fatalities. The findings everywhere show that most anesthetic complications ending in death result from error or lack of skill in management, and not from the agent or technique used.

In Cleveland, the Anesthesia Study Commission has found it advisable to extend the scope of its investigations and discussions to include nonfatal anesthetic complications. One of the reasons is that anesthetic complications, even those not of an unusual nature, unless properly diagnosed and their causes removed, will often cease to be anesthetic complications when carried into the postoperative period. They may become cerebral

complications, or pulmonary or circulatory complications, or metabolic complications. Thus, fatalities occurring twenty-four hours or forty-eight hours after surgery, and generally attributed to these causes, are often in reality the results of anesthetic complications permitted to become chronic.

The Anesthesia Study Commissions are beginning to close a serious gap in medical science. Their investigations have already proved an invaluable clinical and teaching aid. They have cast a new light on the role of anesthesia in operating room fatalities. They can make it possible to investigate analytically the problems of operative mortality and morbidity as well as postoperative fatalities resulting from anesthetic complications. The fact that anesthesia accounts for a large number of preventable deaths, often in good risk patients undergoing minor surgery, must make the setting up and the functioning of these study commissions as vital a matter to the surgeons as it is to the anesthesiologists.

### SUMMARY AND CONCLUSIONS

Until the past decade little emphasis was placed on the contribution of anesthesia to the total of surgical fatalities. The importance of informing the members of the medical profession of the incidence and causes of anesthetic deaths is becoming increasingly apparent as the vital part proper anesthesia plays in surgery becomes more widely recognized.

Accurate and painstaking compilation of data pertaining to deaths during anesthesia will yield information of value in many ways:

It will be possible to assess more accurately the problem in the operating room as it relates to anesthesia and then intelligently determine what steps should be taken to improve anesthesia practices.

Knowledge of therapeutics and prevention of anesthetic complications will be based on more extensive actual experience.

It will be possible to evaluate more quickly new drugs and methods.

It will probably reveal a need for employment in the operating room of diagnostic instruments that will accurately determine the oxygen content of the blood, the state of the circulation, and the cardiac activity at all times. Many of these instruments are already available. The Anesthesia Study Commission may reveal the need for adapting them to clinical anesthesia so that better and safer care can be given to each patient.

There should be an Anesthesia Study Commission in every community of reasonable size. The reports of all operating room deaths can be handled on an entirely anonymous basis. However, if the reporting is to be objective and trustworthy, and the whole effort is to become quantitatively significant, the Anesthesia Study Commission must have the cooperation as well as the backing of the surgeons of each community.

It will be slow work and difficult to overcome the problems involved unless the operating room teamwork between surgeon and anesthesiologist can be carried as it should be, as it must be, into the foundational field of medical science.

### REFERENCES

1. Mousel, L. H.; Stubbs, D.; and Kreiselman, J.: Anesthetic Complications and Their Management, Anesthesiology 7:69-79 (Jan.) 1946.
2. Ruth, H. S.: Anesthesia Study Commission: Findings of Eleven Years Activity, J.A.M.A. 135:881-84 (Dec. 6) 1947.

## ANESTHETIC PROBLEMS OF A DOCTOR DOING GENERAL PRACTICE

JESSIE PRYOR, M. D.
SAN ANTONIO, TEXAS

In the past twenty-five years much has been done to improve the art of anesthesia and minimize its attendant risks and discomforts. Thanks to this work more and more surgery is being done each year with a steadily decreasing mortality and morbidity.

Surgeons have a wider variety of liquids and gases for inhalation anesthesia and newer and more varied combinations of drugs for spinal anesthesia with additional means of controlling the degree and height of the anesthesia and offsetting the drop in blood pressure. Intravenous anesthesia has come into its own with the use of sodium pentothal. Rectal anesthesia has been newly evaluated and better understood. Balanced anesthesia has made it possible to achieve almost perfect anesthesia for almost any case by using the proper combination of two or more agents. The use of a valuable anesthetic adjunct, "curare," a muscle paralyzant, offers the opportunity to use less of a depressing anesthetic agent while achieving workable relaxation for the surgeon. Better technique for refrigeration by ice or air has offered help for cases in which the mortality rate was so high that surgery was avoided.

Table 1 lists the various types of anesthetics most commonly used in the United States at present and indicates something of their usefulness, means of administration, and so forth.

The following comments sum up certain facts about anesthetics and certain important pathologic findings about patients.

Read before the Section on General Practice, State Medical Association of Texas, Annual Session, Houston, April 28, 1948.

*Ether* is most suitable for children. It is not suitable for cases of respiratory disease whether acute, chronic, or quiescent. It is not the first choice for diabetic patients because it tends to raise blood sugar levels.

*Nitrous oxide* presents a problem in cardiac cases because of anoxemia. Sufficient relaxation for abdominal work can be obtained when nitrous oxide is used in combinations with pentothal or curare.

*Ethylene and cyclopropane* raise blood pressure slightly and are highly inflammable. They cannot be used in certain cases, such as goiter or cardiac patients, on account of a tendency to irritate the myocardium.

*Pentothal sodium* can be used in any and all cases where sufficient oxygen can be carried by the blood. It is contraindicated in any condition with obstruction to the airways or with loss of red cells due to hemorrhage or diminished hemoglobin due to infection.

*Spinal anesthetics* are contraindicated in cardiorenal and hypertension cases. The risk lies in the breakdown of the vascular machine. They are contraindicated in the cases of intestinal obstruction with marked distention because the diaphragm is already crowded up by the distended bowel and anesthesia to the level of the eighth or ninth dorsal segment blocks out so much intercostal activity that anoxia and respiratory failure result. It is unwise in pernicious anemia, diabetes, ruptured intervertebral disk, or neurologic diseases of the spinal cord.

*Saddle block and caudal anesthesia*, which are newer forms, are useful in well chosen cases in the hands of trained users.

With saddle block anesthesia, morphine sulfate (¼ grain) with scopolamine (1/150 grain) is given one hour preoperatively. For the anesthetic itself a freshly prepared solution of procaine (75 mg. per 1 cc.), pontocaine (5 mg. per 1 cc.), or nupercaine (2.5 mg. per 1 cc.) in 10 per cent glucose is used. Ephedrine is also included in the solution. When a solution of procaine is used it lasts one and one-half hours, pontocaine two and one-half hours, and nupercaine three and one-half hours. The patient sits up for the injection, which is made rapidly through a spinal needle between the third and fourth lumbar vertebrae. The patient should be allowed to sit up forty seconds after the injection.

*Regional block* has many wide and wonderful uses but certain technical training is needed for best results. It is contraindicated only where the patient has an allergy to the drug. This is a much neglected, valuable form of anesthesia.

*Refrigeration* has a large and growing field in trauma or gangrene of the extremities of aged, toxic, poor risk patients.

The technique for using refrigeration in mid-thigh operation is as follows: The leg is packed in ice up to 2 or 3 inches above the amputation level. After several minutes a tourniquet is applied tightly enough to cut off the blood to the distal part. Sixty pounds of ice are required for three hours. The tourniquet and ice may be left on for days and weeks until toxemia clear up. Surgery is painless. There is no suppression of vital functions of heart, lung, kidney, and liver. There is no postoperative nausea, vomiting, bowel asthenia, and so forth. It is important to thaw slowly by gradually reducing ice bags, or ice over a period of three to five hours. Unless an amputation is planned, no tourniquet is used.

## RISK APPRAISAL

All operations fall into two classes, elective or emergency. Particularly in elective cases it is important to consider the risk involved if surgery is chosen.

The appraisal of the general condition of the patient and the importance of a complete and accurate history cannot be over emphasized. The complete physical examination of the patient, including a laboratory check of the urine and the blood with a Wassermann test, is certainly one way of determining how good a risk any patient is.

Among the points to be considered is the age of the patient. Children show a narrow margin of safety and their adjustment to temperature change is not too efficient. Aged patients show the end results of disease such as syphilitic hearts, bronchitis, cardiorenal changes, arteriosclerosis, and hypertension.

The state of nutrition is important, especially in the obese and the undernourished.

Anemia presents another problem. The reduction of blood volume by bleeding may have developed a compensatory stabilization of blood pressure which breaks down under further loss of blood and fails to respond in the usual manner. Lowered hemoglobin causes insufficient tissue oxidation when the patient is subjected to a slowing of the peripheral circulation by shock or anesthesia.

Respiratory conditions are important whether acute, chronic, or quiescent. Heart findings suggesting any one of the many conditions which may lead to collapse of peripheral circulation and an alteration in the patient's hemodynamics have to be care-

TABLE 1.—*Commonly Used Anesthetics.*

General anesthesia.

I. Liquids:

A. Ether (inhalation):
1. Still the anesthetic most employed.
2. Administered by open drop or closed method using modern gas machine combined with oxygen and other gases.
3. Offers wide range of safety to patient, satisfactory relaxation for surgeon, helps overcome failures of other methods.
4. Basic training in anesthesia is always done by ether.
5. Only the simplest equipment needed.
6. Induction is unpleasant but can be avoided by using nitrous oxide and oxygen fifty-fifty or sodium pentothal for intravenous induction.
7. Loss of body fluids by sweat must be watched.
8. Contraindicated in:
   a. Aged.
   b. Nephritis and arteriosclerosis.
   c. Acute and chronic pulmonary condition.
   d. Diabetes.

B. Chloroform (inhalation): Not much used because of high toxicity and dangerously low margin of safety.
1. Minimizes respiratory and gastric disturbances.
2. Noninflammable.
3. Toxic to heart, liver, and kidneys.

C. Vinethene (inhalation): Not much used because of toxicity and low margin of safety.
1. Must be given in low concentration.
2. Adequate mixture of air.
3. Poor muscular relaxation.
4. Best used for induction only, not maintenance.
5. Toxic to liver, heart, and kidneys.

D. Ethyl chloride (inhalation): Not recommended as general anesthetic.

E. Alcohol (intravenous): Not popular because of complications:
1. Hemolysis.
2. Shock.
3. Decreased urine out put.
4. Vascular sclerosis.
5. Occasional nerve injury due to extravasation at site of injection.

II. Solids:

A. Procaine (intravenous, 1 Gm. in 1,000 cc. normal saline solution administered slowly):
1. Pain is relieved for 4 to 8 hours, due to increased permeability occurring in traumatized tissues.
2. Sensitivity must first be ruled out by small intradermal injection.
3. Any reaction controlled by:
   a. Stopping administration.
   b. Ephedrine.
   c. Barbiturates.

B. Barbiturates (intravenous):
1. Sodium amytal, long acting; toxic to heart, liver and kidneys; no longer used for narcosis.
2. Sodium pentothal, short acting:
   a. Total dosage 1 to 2 Gm.
   b. Preferred to all other intravenous anesthetics.
   c. Can be used alone or combined with other anesthetics, inhalational or regional. Can combine with local block or spinal anesthesia or curare; results equal balanced anesthesia.
   d. Safe when administered by those who know its properties and action.
   e. Controllable and rapidly detoxified and eliminated.
   f. Wide range of age groups.
   g. Can be used with full stomach; no harm to liver, heart, or kidneys if properly administered.
   h. Comfortable induction, steady anesthetic and satisfactory postoperative recovery; anesthesia occurs in 30 to 60 seconds; relaxation is good, resembling normal deep sleep with regular respiration and pink, dry, and warm skin; recovery smooth and without nausea.
   i. Airway and available oxygen needed.
   j. Contraindicated in the presence of allergy to barbiturates, in patients lacking red cells, or in the presence of obstructed airways (for example, tumors of the mouth).
   k. Causes tissue destruction in solution stronger than 2.5 per cent.
   l. Preoperative morphine and atropine recommended; by using nitrous oxide and oxygen fifty-fifty the total dose is reduced and the tissues are flooded with oxygen.

C. Avertin (tribromethanol) (rectal):
1. Used as basal anesthetic.
2. Can be given in patient's room.
3. Causes no significant change in pulse, respiration, blood pressure, or psychic disturbance. Ideal for brain surgery. Also used for children as a preoperative measure or where it seems best to depend on local anesthesia for surgery.
4. Cannot be used in presence of rectal disease.
5. Sometimes postoperative depression is prolonged, leading to pulmonary complications.

III. Gases:

A. Nitrous oxide (inhalation, oral and intratracheal):
1. Induction is rapid and pleasant—its greatest value.
2. Recovery likewise rapid and pleasant.
3. Little nausea and vomiting.
4. No pulmonary edema or secretion.
5. Cardiac depression at a minimum (few cardiorespiratory complications).
6. Not inflammable; can be used with cautery.
7. Great disadvantage is that it gives poor relaxation. Can be overcome by use of curare, which widens its value.
8. Must not reduce oxygen concentration in tissues too low.

B. Ethylene (inhalation, oral and intratracheal):
1. Can be used with 20 to 30 per cent oxygen and yet get relaxation.
2. Hazard of inflammability is high.

C. Cyclopropane (inhalation, oral and intratracheal):
1. Most potent of 3 gaseous anesthetics.
2. Can be used with 90 per cent oxygen.
3. Hazard of inflammability high.
4. Ideal in chest surgery.
5. Causes increased irritability of myocardium which may lead to fatal arrhythmia. This can be partially overcome by giving 3, 5, or 10 cc. of 10 per cent novocaine intravenously.
6. Inflammability can be decreased by mixing with helium.

IV. Endotracheal anesthesia:
A. Offers a safe, smooth anesthetic because of open tracheobronchial airway.
B. Desirable in surgery of the chest and upper abdomen and intrathoracic goiter.
C. Mucus in air passages can be sucked out when necessary, and artificial respiration can be given.
D. Postoperative ventilation and reinflation of collapsed lung in chest surgery can be secured.
E. Quiet breathing and better relaxation are insured.

V. Anesthetic adjunct: Curare, a muscle paralyzant:
A. Useful in upper abdominal surgery with light general anesthesia for those familiar with its properties.
B. Effect secured in 1.5 minutes and wears off in 30 minutes.
C. Respiration and blood pressure somewhat depressed by it; therefore it is best used with an endotracheal airway.
D. Usually no prolonged depression after the use of one or two doses of 40 units, but repeated large doses may cause prolonged depression.
E. Prostigmine is the antidote.

Regional anesthesia.

I. Cocaine:
A. Useful for topical anesthesia.
B. Habit forming and highly toxic; toxicity can be reduced by giving a barbiturate the night and morning before its use.

II. Novocaine (procaine):
A. Satisfactory and safe injectable agent for use in any part of the body.
B. Used in solutions of 0.5 to 2 per cent; the total amount should not exceed 2 to 4 Gm. of the drug.
C. Where local infection exists, penicillin can be added to the solution.
D. Can be used with diffuse infiltration, local nerve block, continuous spinal, continuous caudal, paravertebral nerve, and paravertebral sympathetic block techniques.
E. Infiltration anesthesia especially preferred with shock, severe toxemia, marked debility, head injuries, or minor surgery.

III. Bromsalizol:
A. Lengthens effect of regional nerve block; especially useful in sympathetic and paravertebral block as in sciatica.
B. Produces anesthesia for several days or weeks.
C. Prepared in 10 cc. amounts of 0.4 per cent in peanut oil.

IV. Continuous caudal anesthesia:
A. Useful for work about the perineum and rectum and in childbirth.
B. Technique: Inject 20 to 30 cc. of 1.5 per cent novocaine solution with an additional 25 cc. as needed. Evidence of vascular collapse can be avoided by adding 2 minims of adrenalin to the original injection.
C. Complications:
1. Collapse due to injection of fluid into subarachnoid space.
2. Accidental injection of fluid into extradural veins leading to vascular collapse.
3. Convulsions.
4. Infection—local or the result of long use of catheter in situ.

D. Contraindications:
1. Abnormalities of the sacral region.
2. Infection of skin.
3. Allergy and sensitivity to local anesthetic agent.
4. Patients who are apprehensive or neurotic or obese.

TABLE 1.—*Commonly Used Anesthetics.—Continued.*

V. Continuous spinal anesthesia:
  A. Technique: A 10 per cent solution of procaine is diluted to 3 per cent. (This can be made easily by using 3 cc. of a 10 per cent solution plus 7 cc. of spinal fluid.) Following 50 mg. of ephedrine given at the time of puncture, from 2.5 to 4 cc. of the 3 per cent solution are given as the initial dose, tilting the patient's head down. The initial dose will last from 40 to 50 minutes. From 1 to 2 cc. can then be given as needed.
  B. Complications:
    1. Immediate vomiting, nausea, and retching which can be relieved by pentothal.
    2. Headache in 5 per cent of cases.
    3. Urine retention in 5 per cent of cases.

VI. Saddle block anesthesia: A low spinal anesthesia using small amounts of a concentrated agent in heavy solution for urologic, rectal, gynecologic, obstetric, and orthopedic surgery cases.

VII. Plexus nerve block:
  A. Useful in blocking the upper extremity, such as stellate ganglion, for scalenus syndrome, causalgia, Buerger's disease, osteoperosis, thrombophlebitis, and Reynaud's disease.
  B. Injection is made one finger's breadth above the midpoint of the clavicle.

VIII. Lumbar sympathetic block:
  A. Used to diagnose early thrombophlebitis and sympathetic nerve disturbances of the lower extremities.
  B. It abates stimuli by interrupting nerve impulse outflow from lumbar sympathetic ganglion and trunk.
  C. Pain is less, blood supply is improved, and lymph drainage is increased.
  D. Repeated injections may be curative.

IX. Refrigeration anesthesia:
  A. Ethyl chloride: Can be used as a refrigerant analgesic or for treating animal parasites in the skin.
  B. Ice:
    1. Cold is both an analgesic and anesthetic.
    2. Local effects secured are sedation, diminished circulation, diminished metabolism, diminished absorption, inhibited bacterial activity, abolition of pain and spasm because painful afferent impulses are blocked, and elimination of primary neurogenic pain.
    3. Decreased metabolism and circulation reduce oxygen requirement to a level in keeping with that available as a result of the injury, thereby reducing tissue death.
    4. Inhibition of bacterial growth and lack of absorption of noxious material from wound site and prevention of blood and fluid loss avoids the development of sepsis and secondary shock.
    5. Posttraumatic venous thrombosis and pulmonary embolism are absent.
    6. Anesthesia produced by 5 C. or 40 F. does not damage or interfere with healing.
    7. Quick thawing causes tissue destruction. This must be avoided by using ice bag packs for two or three hours, removing the bags one at a time.
    8. Useful for leg amputations, especially for elderly patients.

fully considered. Syphilis must be considered; there are immediate or resultant evidences. Hyperthyroidism and diabetes demand a particular and special type of preparation for surgery.

## CHOICE OF ANESTHETIC

Having decided that a patient who needs surgery is reasonably safe for some kind of anesthetic (of course the safety and comfort of a patient come first), the physician has to choose the anesthetic best suited to the particular case. The anesthetist can help but he cannot make the whole choice, for the physician knows better than he the psychic and neurologic make-up of the patient.

Then comes the "selling" of the chosen anesthetic to the patient. He has probably firm ideas about what he wants even though it is not always best for him. The doctor may also have certain preferences in the matter. At this point the anesthetist may be able to help by suggesting a combination of two or more anesthetics which will provide safety and comfort for the patient and please the doctor at the same time.

Anesthesia like surgery must always be safe for the patient first and ideal second.

Certain other factors need to be taken into account when choosing an anesthetic for a patient. Even though the physician and anesthetist may agree that "spinal" is the ideal choice for a given person, if a relative or friend of the patient has died during an operation under spinal anesthetic, it is poor policy to insist on using it for him. Again, even though a spinal anesthetic might seem good for a diabetic or pernicious anemia patient who is sooner or later going to have spinal cord changes, it is sometimes better to use a different anesthetic. Such a patient is sure to remember in 1958 the spinal anesthetic used in 1948 and give it all the blame for his paresthesias.

The time and place and circumstances under which anesthetics are to be given are also factors in the choice of what to give.

If the physician lives in a city and can phone for an anesthetist to come to his office or a patient's home, bringing a portable gas machine or intravenous pentothal to give the patient while a fracture is reduced, an abscess is incised, or a woman is delivered, the physician can use his own judgment in the choice of anesthesia. If the physician practices medicine in a small town, he must do the best he can, calling on one of his colleagues or giving his own anesthetic and using local, ether, pentothal, or even chloroform anesthesia, depending on time, place, and circumstances.

Anesthesia must sometimes be given to save a life even when the physician knows the patient has recently eaten a full meal. The danger of death from the aspiration of food while vomiting almost excludes inhalation anesthetics. Large loss of blood and certain head injuries and damage to the respiratory tract exclude sodium pentothal. The physician thinks hard and fast to decide between regional (or local), intravenous morphine and scopolamine, or cyclopropane by endotracheal tube.

The badly shocked patient and the intoxicated patient are a pair who should never have an anesthetic if it can possibly be avoided. Certainly only such emergency work as is imperative to stop hemorrhage

and prevent further infection and shock should be done. Treatment for shock, temporary splints, transfusions, and penicillin can be relied on to take care of the condition until the patient is sufficiently stabilized to risk adding more shock.

Considerable firmness is needed at times to resist pressure from families "to fix everything right now." Along the same lines, economy sometimes causes patients to beg for several operations at one time, often more than the patient's condition would warrant. Three hours of surgery means three hours of anesthesia with additional trauma to sympathetic nervous systems and loss of blood. Furthermore, there will be added postoperative discomfort, more nausea, and additional loss of fluid by vomiting and sweating. All of these increase the already heavy toll taken from the patient.

### PREANESTHETIC MEDICATION

Preanesthetic medication is being much overdone. People demand painless childbirth and surgery without apprehension or fear.

Morphine in a suitable dose (figured to meet the necessities of the age, weight, and type of patient) seems to be always a good idea unless there is a definite history of an allergy.

Pantopon, dilaudid, and demerol do not seem to achieve the proper end and in many instances depress the patient too much.

The barbiturates are fine for bedtime sedation the night before surgery but should be omitted on all but spinal anesthetic cases for preoperative medication. They should never be given any patient over 60 even before a spinal. The depression in these cases is too marked.

Atropine or scopolamine both serve well to dry up any excessive secretion of mucus in the mouth and respiratory tract. Scopolamine has the additional value of helping to fog the intellect and produce a kindly "sleep walker's" state of mind.

### SUMMARY

1. The variety of anesthetics, plus the number of possible combinations, offers the physician who knows his patient's needs a safer and more comfortable chance at surgery than could be obtained twenty-five years ago.

2. There are pleasant varieties for minor work or induction for deeper anesthesia.

3. Any of the anesthetics combined with curare can be used when relaxation with only limited analgesia is needed.

4. Regional and spinal techniques can be combined with certain of the general anesthetics for any number of cases.

5. Preanesthetic medication carefully used has become a helpful part of the anesthetic pattern.

205 Camden Street.

### ABSTRACT OF DISCUSSION

**Dr. W. H. Warren,** Center: Dr. Pryor's paper indicates she has done considerable research in anesthetics.

In my practice I am using more and more local anesthesia with procaine from .25 to 2 per cent solution. This anesthetic can be used on children from 4 to 5 years old and up if they are given per rectum a proper dose of pentobarbital or other barbituric acid preparation. A barbituric acid preparation can be given by mouth, especially to the older child. This should be given at least two hours before the operation.

In tonsil operations in children I induce ether anesthesia by the open ether method and before beginning the operation turn on the ether machine.

In spinal anesthesia I use a small spinal needle, gauge 22. I withdraw 4 cc. of spinal fluid and dissolve the procaine crystals in this fluid. The average dose for adults is 150 mg. injected between the third and fourth lumbar vertabrae, which is on a straight line between the cresta iliae. In case of nausea and vomiting we give small injections of adrenalin hydrochloride—about 3 minims. The essayist mentioned the use of pentothal sodium in this condition.

In a general anesthetic the danger may show up in paleness or blueness of the skin, dilated pupils, rapid pulse, and difficult breathing. It is essential to watch the blood pressure, the color of the skin, the pupils, and the pulse rate.

---

### MENINGITIS LOSING GROUND

Spinal meningitis, terror of World War I training camps, has today lost much of its menace, according to a report by Dr. Worth B. Daniels submitted through the office of the Surgeon General of the Army and published in the *Archives of Internal Medicine*.

The report points out that deaths resulted in less than 3 per cent of some 14,500 soldiers treated during the World War II period for this once almost hopeless infection. The remarkably low death rate was due, Dr. Daniels said, both to the efficacy of sulfadiazine and penicillin in controlling the infection and to quicker diagnosis. Early diagnosis and the prompt use of the drugs can usually stop the spread of the bacteria before they have a chance to become localized in the linings of spinal cord and brain.

Altogether there were about 300 deaths from meningococcic infection in World War II. Approximately 10 per cent of these died before the germ had become localized in the nervous system tissues.

The war experience, Dr. Daniels says, shows that sulfadiazine is the best available drug. It is not as effective as penicillin against the bacteria in the blood stream but the latter drug proved to have one great disadvantage. While penicillin circulates through the blood stream freely, it does not get into the cerebrospinal fluid in predictable quantities and hence cannot be relied upon to prevent invasion of brain and spinal cord tissues. Sulfadiazine enters the spinal fluid rapidly in high concentrations.

# THE SCOPE OF PLASTIC SURGERY

TRUMAN G. BLOCKER, M. D.
GALVESTON, TEXAS

It is unfortunate that the term plastic surgery has been employed to refer to maxillo-facial and reconstructive surgery. The nomenclature is confusing, and there has been no clear definition of the scope of plastic surgery for the information of the general practitioner, the various specialists, and the lay public. Reputable plastic surgeons are at the mercy of unscrupulous members of the profession who advertise themselves as beauty surgeons and also, unfortunately, of well-meaning journalists who so dramatize and glorify the possibilities of reconstructive procedures that plastic surgeons are made to feel like fools and charlatans in the eyes of their colleagues. During the war so much attention was given in various magazines to the treatment of massive avulsion wounds of the face that a great many people, doctors included, feel that all major plastic surgery is over until the next war. Actually the scope of such work is broadening all the time as new skills are developed and as surgeons understand more and more about the anatomy and physiology of the body tissues and their inherent possibilities for growth and transplantation in new environment.

Plastic surgery is the relief of congenital and acquired deformities, functional or cosmetic or both, by the application of certain techniques modified to fit the requirements of the individual problem. These techniques are (1) the rearrangement of existing tissues; (2) the use of flaps of tissue from adjacent or distant areas of the body; and (3) the use of free transplants of skin, subcutaneous tissue, fascia, cartilage, bone, and so forth. Plastic surgery is peculiar in that it is concerned with no particular region of the body, although it has taken over maxillo-facial surgery of all types because here cosmetic appearance is such an important factor in the treatment of the patient.

Maxillo-facial surgery includes congenital deformities of the head, neck, and oral cavity; malignant and benign tumors; prognathism and receding chin; burns; traumatic lesions involving the soft tissues or facial bones; facial palsy; and deformities of the nose, ears, and eyelids. Disfiguring defects of the face affect so profoundly the social and economic status of the person that patients who can be helped by plastic surgery should be referred as early as possible for treatment.

Read before the Section on Surgery, State Medical Association of Texas, Annual Session, Houston, April 27, 1948.

In extremity work much progress has been made during recent years in hand surgery, which has now attained a high degree of specialization. The chief problem in traumatic lesions of the hand lies in accurate diagnosis of the deformity, which is usually much greater than is apparent on superficial examination. The injuries lie in the field of plastic, orthopedic, and neurosurgery alike, but since repeated operating provokes new trauma, the lesions are best treated by one surgeon and at one sitting if it is at all feasible. In many cases a temporary thick-split graft applied to the palm at the time of injury will prevent a contracture which is later exceedingly difficult to relieve; the covering of raw areas also eliminates chronic infection with resultant stiffening of the hand. I have found it greatly worth while in acute injuries and even in those of long duration to repair the small digital nerves which were formerly ignored completely.

In the treatment of burns, the plastic surgeon sees few early cases but is called upon only after hypertrophied scars and horribly deforming contractures have developed. With acute extensive burns the patient under optimum conditions should be ready for grafting within three or four weeks before scarring has begun to take place. It is disheartening indeed to have as state cases admitted to our hospital in Galveston a large number of patients who have had uncovered burns with exuberant granulations for many months or even more than a year, and who are in such a state of malnutrition that they require a long period of treatment of anemia, weight loss, and protein imbalance before any operative procedures can be attempted. I think too much time is wasted in hoping that some patent liquid or ointment will heal a burn or encourage superficial epithelialization. The layman, deluded by over-ambitious advertising, knows no better; but the physician should certainly be honest with himself and realize from the beginning that a deep second-degree or a third-degree burn will require a skin graft unless it is very small in extent. If the general surgeon or practitioner has not had experience in the proper use of pressure dressings and in the avoidance of chronic shock with suitable amounts of plasma and blood, the acute treatment of burns may well be in the hands of the surgeon who is to apply the grafts.

Other problems in plastic surgery which involve the extremities or trunk are the treatment of chronic gravitational ulcers, various congenital defects, and new growths of various types; relief of depressions resulting from loss of soft tissue or muscle;

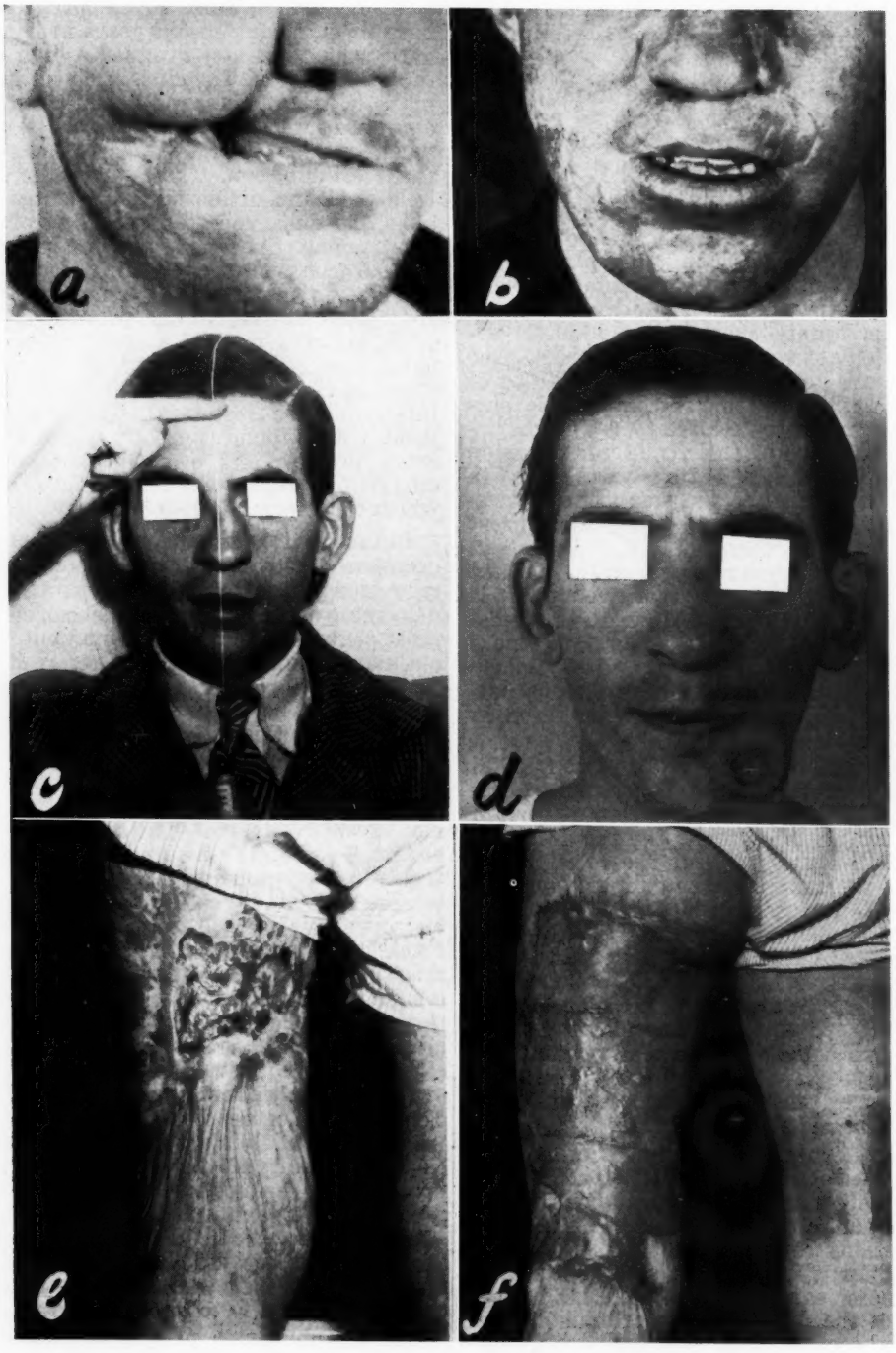



FIG. 1a. Severe avulsion wound of the face with loss of skin, musculature, mucous membrane, and upper alveolar process.

b. Postoperative photograph of *a* following excision of scar tissue and reapproximation of the structures utilizing a skin graft to substitute for mucous membrane loss and a prosthesis to round out the upper alveolar area.

c. Severe nasal deformity following trauma.

d. Postoperative result after refracturing the nasal bones in *c* and repositioning.

e. Chronic ulcerative process in an old burn scar of twenty years' duration.

f. Photograph after excision of the ulcer and all scar tissue in *e* and replacement with split skin graft.

and excision of painful, adherent, or constricting scars, as well as care of extensive acute injuries.

The plastic surgeon has sometimes jokingly been accused of wanting to treat the skin and its contents. Most of his work, however, is referred by other doctors, and to each specialty plastic surgery has certain types of services to offer. The psychiatrist, for example, may feel that a patient's personality disorder stems from a disfiguring birthmark. The neurologist may be concerned with the problem of prevention and treatment of trophic ulcers. The dermatologist is interested in working with the plastic surgeon on the best treatment for malignancies of the skin. The ophthalmologist may refer a patient for blepharoplasty. The medical

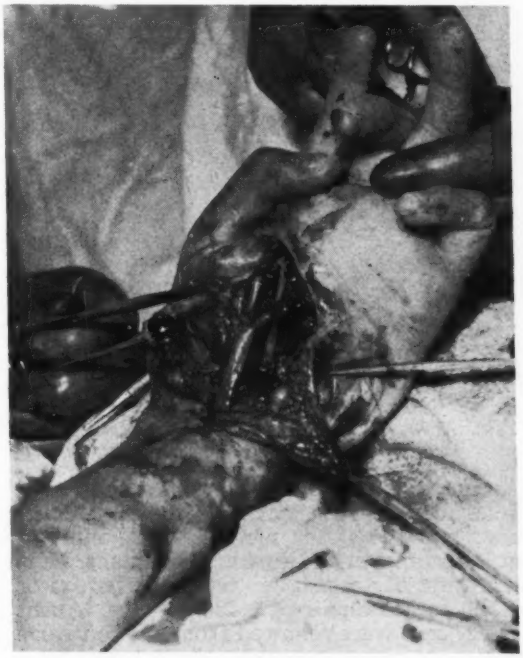


FIG. 2. Repair of median nerve to the thumb, index, long, and ring fingers, and tendon grafts to the index finger and thumb in an old shotgun wound of the hand.

man may seek measures to relieve facial palsy. The urologist and gynecologist are confronted with various congenital deformities, such as hypospadias and vaginal atresia, and with treatment of traumatic deformities which involve the genitalia. The orthopedic surgeon may require assistance in revision of scars, lining of osteo cavities with skin grafts, relief of contractures which limit joint motion, and restoration of soft-tissue covering in an area which is to receive a bone graft.

Plastic surgery, so far as other branches of surgery are concerned, is not merely a show of before-and-after pictures at a medical meeting or a chain in the line of "passing the buck" from one specialty to another. It has to offer, also, certain tricks of the trade, certain plastic principles which are actually principles of general surgery in their best and most refined sense, based upon a sound physiologic basis. These rules include the directions of incisions, for example; the technique of undermining to relieve tension on a suture line; the use of the z-plasty; the methods of application of skin grafts; the indications for pressure dressings; the importance of closing a wound on the face accurately in layers and with delicate suture material. No matter what his specialty, every surgeon, the plastic surgeon believes, should learn to "sew a fine seam."

University of Texas School of Medicine.

ABSTRACT OF DISCUSSION

**Dr. Thomas D. Cronin,** Houston: Papers of this nature serve a real purpose to the profession. After all, plastic surgery is a relatively small and new specialty and it can render the greatest good only as it is known and used by the profession.

As regards recognition and understanding by the profession in general, plastic surgery is at about the point orthopedic surgery was some twenty years ago. I recall a story that was told me regarding the first orthopedist who came to Houston. Several of the doctors of the time told him they could not see how he could earn a living in this specialty, that there was not enough for him to do. Needless to say, these predictions proved false. Cases that had been considered hopeless or had been poorly handled began to be referred to the physician prepared to handle them best. So it is with plastic surgery. The volume of work will show a natural expansion as the profession and the public learn what can be done.

Because of the few plastic cases likely to be seen by the average general surgeon or practitioner, he will usually find that it is economically unsound to take the training necessary to handle these patients himself. It is in the care of this type of patient that the specialty demonstrates its real worth.

## PENICILLIN AIDS IN TETANUS

Penicillin is a valuable aid in the treatment of tetanus, according to three physicians of San Juan, Puerto Rico. Writing in the September 18 issue of *The Journal of the American Medical Association*, the physicians—R. S. Diaz-Rivera, Luis R. Deliz, and Jose Berio-Suarez—describe a study of 59 patients who were treated for tetanus at the San Juan City Hospital.

Penicillin should be given with the tetanus antitoxin, they say. The mortality rate for all patients treated was more than 20 per cent, and the mortality rate of patients who were given enough penicillin to constitute a "fair trial" of the drug was nearly 18 per cent.

This study shows that tetanus has a much higher mortality rate among Negroes than among white persons. The rate among white persons was slightly more than 15 per cent, while the rate among Negroes was 30 per cent.

# FREE FULL-THICKNESS BURIED SKIN GRAFTS IN THE REPAIR OF HERNIAS

R. A. RICHESON, M. D.
HOUSTON, TEXAS

In the repair of any hernia, the surgeon's chief concern is the possibility of recurrence. Recent figures for recurrence of primary hernias vary from 0 to 20 per cent, and even higher in the secondary type hernia. There is a wide variation of recurrence figures in different clinics and with different surgeons. The accepted average recurrence rate for indirect inguinal hernias is about 12 per cent. Max Page,[13] in a series analyzed in 1934, found that there was a recurrence rate of 20.5 per cent, as contrasted to 12 per cent in 1942. This improvement was due to the adoption of more conservative methods in the treatment of the earlier type of case. Fallis[6] analyzed 200 cases of recurrent inguinal hernias with a recurrence rate of 8.25 per cent for primary operations. McCloskey and Lehman[11] analyzed the results in different American clinics and found that with the Bassini operation and its modifications, recurrences varied between 5 and 20 per cent in the indirect type in inguinal hernias, and between 7 and 12 per cent in the direct type. When fascia was used in the repair, recurrences varied from 3 to 4 per cent in the indirect and 7 to 9 per cent in the direct variety.

Grace and Johnson,[8] in an analysis of 1,032 patients more than 50 years old, reported a mortality of 3 per cent and a recurrence rate of 25 per cent in primary herniorrhaphies, and 34 per cent in recurrent inguinal hernias.

Unquestionably the use of fascia, although used in the less favorable type of hernia, definitely reduces the incidence of recurrence.

It is generally accepted that about 60 per cent of hernias recur within the first six months and 75 per cent within the first year. With a more profound knowledge of the anatomy and physiology of hernias, investigators have attempted not only to classify the varieties of hernias, but also to devise a special procedure for each. Recurrences, however, still occur, but are less frequent. Twenty per cent of the patients with recurrences are unaware of them. It will be admitted by all surgeons that recurrence rates are still too high, thus justifying consideration of methods to reduce these rates still further.

An operation designed to obviate recurrences is that advocated by Mair,[12] in which whole skin implants are inlaid under extreme tension to protect the posterior wall of the inguinal canal and to narrow the internal ring. This method has also been employed in the repair of incisional and ventral hernias, as well as muscle hernias.

## FASCIAL IMPLANT

At present, fascial implant is the most popular and accepted method of repair in large and recurrent hernias. The results admittedly are good and many surgeons may ask what reason there can be for employing the use of other substances; however, there are disadvantages in the use of fascia.

When employing fascial strips, potential gaps are left when strands do not unite, and

FIG. 1. Double elliptical incision employed to obtain a donor graft locally for repair of hernia.

recurrences, usually of the direct type, may take place. It is necessary to use a large needle in the Gallie method, with unnecessary trauma to the inguinal ligament. Burdick[2] and his colleagues reported the use of fascia in the repair of 1,485 hernias. About 70 per cent were followed from one to twelve years. A recurrence rate of 29.1 per cent was found in the 975 cases followed up. Reoperations showed slight evidence of the fascia used. They concluded that drawing bulky fascia on large needles through the transversalis fascia and Poupart's ligament produces weak spots which predispose to a recurrence. The risk of injury to the femoral vessels is increased, with its resultant complications.

Postoperative wound infection is more common when fascia is used, possibly because of increased operating time. Burdick found sepsis present in 7.9 per cent of 1,153 cases in which autogenous fascia had been used, and 12.1 per cent of 231 cases when ox

Read before the Section on Surgery, State Medical Association of Texas, Annual Session, Dallas, May 6, 1947.

fascia was employed. Increased sepsis was also reported by Beekman and Sullivan[1] when this technique was used.

It has long been recognized that increased operating time, type of incision, and reflex muscle spasm contribute to postoperative pulmonary complications. Increased operating time could be materially reduced if sterilized dead fascia could be utilized. Considerable research has been done using this technique, but the recurrence rates have not been affected.

The Bloodgood technique, in which a portion of the rectus sheath and muscle are transplanted and sutured to the shelving method, does not make available sufficient fascia in many cases. This repair is suitable primarily in inguinal hernias, and is not satisfactory for the large varieties.

Gallie repairs the posterior wall of the inguinal canal by interlacing strands of live fascia lata used as suture between the conjoined tendon and Poupart's ligament. The donor site is the thigh, and strips of fascia are obtained by a fasciatome or by an extensive incision. Secondary muscle hernia is common and may be symptomatic in as high as 20 to 30 per cent of the cases. This complication is particularly annoying in workmen's compensation cases and in military

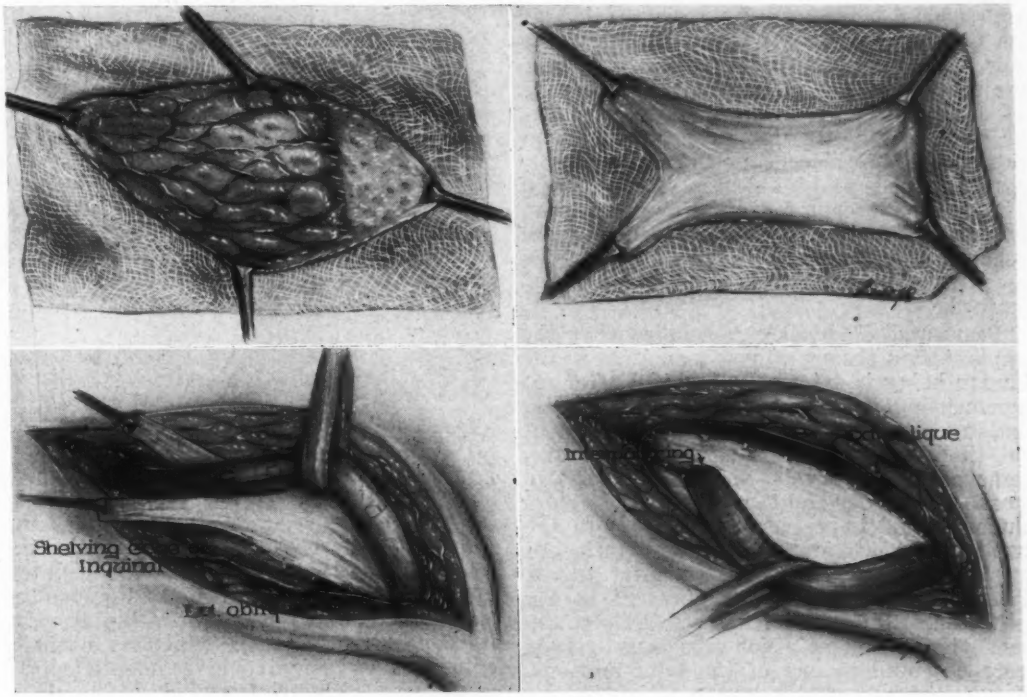


FIG. 2. Graft being prepared by excision of all subcutaneous tissues (upper left) and by incision in the end of the graft with cutist surface exposed (upper right). At lower left the graft is in place with the incised end snugly surrounding the cord at the internal inguinal ring. At lower right the full thickness skin graft, cutis side up, is sutured beneath the cord, in an indirect inguinal hernia.

edge of Poupart's ligament, is adaptable only to inguinal hernias and is designed to reinforce the inguinal triangle. The internal ring through which the majority of indirect recurrences take place is not reinforced. This procedure has been modified and a triangular flap of the anterior sheath of the rectus is reflected.

The McArthur technique, in which two strips of fascia are cut from the upper and lower flaps of the aponeurosis of the external oblique muscle and used as suture material, employing essentially the Bassini personnel. Medicolegal entanglements have arisen as a result of employment of this technique. This objection also holds true when a pedicle flap of fascia lata is transplanted as advocated by Iason.[9]

The use of fascia lata in large complicated hernias is of definite value; however, there still remains a substantial recurrence rate which is altogether too high, especially in direct and incisional hernias.

### BURIED SKIN GRAFTS

Loewe[10] first advocated the use of the cutis graft in surgery for the repair of anatomic

defects in postoperative hernias. Rehn[15] was the first to apply it clinically. The term "cutis" was used because the skin utilized in plastic repair was devoid of epidermis. Rehn[15] and his associates concluded that buried cutis grafts are gradually converted into fibrous tissue. This metaplasia into stout connective tissue is, in part, due to the tension under which the graft is sutured.

Mair,[12] in quoting Uihlein, stated that the latter "was afforded the opportunity of operating upon two patients who had submitted to a cutis graft repair four years earlier. Sections were removed for examination. He found that there was a complete metamorphosis of the transplant. The grafts represented normal connective tissue with its fibrous and fatty components, blood vessels, and nerves. No hair follicles or glandular tissue could be identified, and there was no evidence of cyst formation, either macro- or microscopic. He did, however, note the presence of large cells with clear, deeply staining nuclei and lying in rows or in rings. These were interpreted as being remains of hair follicles or glands, surrounded by giant cells, macrophages, and lymphocytes. No scar tissue was seen in the sections examined."

Peer and Paddock[14] concluded that the implantation theory of cyst formation in the human being is extremely doubtful after experimenting with buried skin of the chest and abdomen. After microscopic study of full-thickness skin grafts of human beings, removed at intervals varying from two weeks to twenty-eight months, they concluded that "the epidermis survived in the two weeks graft and in the one month, but was entirely absent in all of the later grafts. The sebaceous glands were present in the two weeks sections, but showed definite degenerative changes. No sebaceous glands were observed in any of the later sections. Hair follicles were observed in all of the sections up to and including those examined at five and one-half months. They were absent in those examined later. Sweat glands were observed in all of the sections up to and including those examined at twenty-eight months. Neither cyst formation nor malignant change was observed in any of the sections. Autogenous full-thickness skin buried in the human being acts differently from autogenous full-thickness skin buried in animals (dogs)."

Mair[12] had occasion to explore an inguinal canal in a human subject into which a whole skin graft had been sutured for a large direct hernia three months earlier. He stated that "the graft was very firmly attached to Poupart's ligament, aponeurotic medial aspect of the internal oblique, and insertion of the rectus sheath in the pubis. It was not possible to identify, with assurance, the area where the graft ended and normal tissue began, as the change into tissue closely resembling that to which the implant was sutured was so striking. The appearance closely approached that of a normal inguinal canal, and the dense fibrous tissue formation

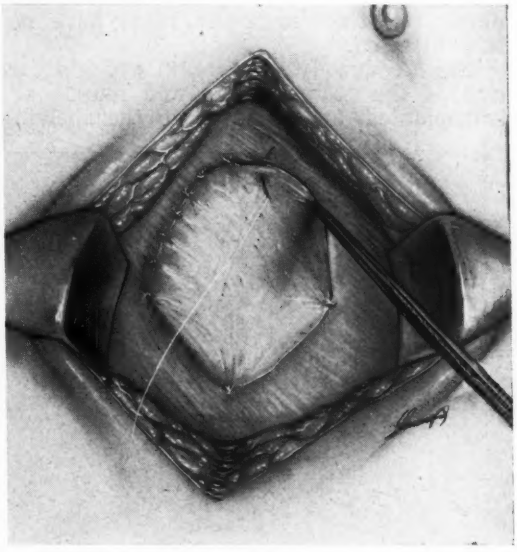


FIG. 3. Appearance of a graft in situ, used in the repair of an incisional or ventral hernia.

and deformity of normal anatomy, which is so striking a feature of recurrent fascial hernias, was absent. It is difficult to imagine wherein the repair could have been improved. A section of the supero-lateral part of the graft was removed for examination. The histology was that of highly vascular connective tissue, in which no dermal or epidermal elements could be identified. The graft was richly infiltrated with collagen fibers, and there was firm adhesion to the underlying muscle. No trace of even microscopic cyst formation was found, but a number of giant cells were observed. No hair remnants could be identified."

In experiments on rabbits and guinea pigs, Mair found that after five months, histologic study of the grafts showed them to be intensely vascular, hair follicles could not be identified, sebaceous glands and dermal papillae were absent, and sweat glands were showing signs of advanced atrophy and fibrous tissue replacement.

Cannaday[3, 4] and his colleagues advocated, and have used, cutis grafts for many purposes not only in the repair of all types of hernia where fascia would ordinarily be em-

ployed, but also in suspension of the uterine cervix for the relief of prolapse; suspension of the urethra for the relief of urinary incontinence; repair of unstable knees; reconstruction of the crucial ligaments of the knee; fractures of the patella and ulna; ankylosis of the jaw; sterno-clavicular dislocation; luxation of the acromial end of the clavicle; repair of a contour defect over a depressed area in the frontal bone; implantation after sequestrectomy for chronic discharging sinus of the foot; stage ligation of the common carotid artery; partial occlusion of the femoral artery for popliteal aneurysm; replacement of torn dura; sigmoid colostomy for a bridge to support the bowel; and implantation for the relief of loss of bowel control due to destruction of the sphincter muscle.

They concluded that the field of usefulness is wide and the results have been superior to those in which fascia has been used because of the pronounced tensile strength and freedom from tendency to split when subjected to lateral strain. They reported its use in 129 cases including 66 cases of hernia. The recurrence rate has been 3.2 per cent. It must be appreciated that only the more difficult cases were selected for this procedure.

## CASE REPORTS

I was confronted, in December, 1945, with the problem of repairing a large ventral incisional hernia in a man, aged 27. Using the technique employed by Mair, a large full-thickness skin graft was used to close the defect in the anterior sheath of the right rectus muscle and aponeurosis of the external oblique muscle. The herniation followed a perforating wound of the abdomen sustained in July, 1944, when he was struck with mortar shell fragments. Cecostomy was performed elsewhere at the time of laparotomy and the patient subsequently developed an extremely large incisional hernia.

A graft approximately 3 by 6 inches was obtained from redundant skin, excised by an elliptical skin incision. This was sutured to the anterior sheath of the rectus muscle and aponeurosis of the external oblique muscle to close the anatomic defect, after the peritoneal, properitoneal, and posterior sheath of the rectus muscle had been closed by imbrication. The postoperative course was uneventful and satisfactory, and healing of the wound was by primary intention. Early ambulation was employed and the patient was out of bed the day following surgery. The repair was adequate and satisfactory, and there has been no recurrence seventeen months following the surgical repair. This technique was so satisfactory that it was again employed in the repair of a large right direct inguinal hernia with equally gratifying results. A third case in which this method of repair was utilized was in the repair of three symptomatic muscle hernias involving defects in the fascia of the gastrocnemius and anterior tibial muscles. The largest defect measured 3 by 2 inches in size. The skin from the lateral aspect of the thigh was utilized as the donor site. A firm and satisfactory repair was obtained without complication and there has been no recurrence of herniation sixteen months following the surgical procedure.

Recently, a large left indirect inguinal hernia in a 55 year old man was repaired using a full-thickness buried skin graft to reinforce the posterior wall of the inguinal canal and internal ring. The immediate postoperative end result has proved satisfactory, but it is too early to determine the ultimate result.

## TECHNIQUE

The technique described by Mair, with a few modifications, has been used. A forty-eight hour skin preparation is adequate and desirable when full-thickness skin grafts are to be buried. Mair recommended a seventy-two hour preparation, while Cannaday[5] employed a twenty-four hour preparation in using a cutis graft. The donor site is prepared by ten to fifteen minutes scrubbing with tincture of green soap and water, followed by alcohol and ether and application of a sterile dressing. This is repeated the following day and at the time of surgery.

The anesthesia does not differ from that used in any other herniorrhaphy, and the surgery may be performed under local anesthesia. It is best, however, to implant the graft with the musculature completely relaxed; therefore inhalation or spinal anesthesia is preferable.

If the donor graft is obtained locally, the incision is elliptical in the central portion, and of sufficient size to obtain a graft large enough to repair the defect. The graft is then placed in normal saline solution (fig. 1).

In the case of inguinal herniorrhaphy, the most suitable physiologic repair applicable to the individual patient is carried out, usually employing the technique of Bassini and Halsted or some modification of it. The aponeurosis of the external oblique muscle is incised from above downward and the flaps reflected in the usual way to expose the inguinal canal and cord. The conjoined tendon is carefully exposed and stripped of all tissue, as well as the shelving edge of the inguinal ligament. The cord with the cremaster fascia is lifted from the canal. In case of an indirect inguinal hernia the cremaster fascia is incised, the hernial sac is dissected free, and a high ligation with transfixation of the neck of the sac or a purse string suture is employed at a level with the flare of the parietal peritoneum.

It is important to stress the closure of the internal ring by carefully placed sutures in the fascia transversalis, both above and below, in order to narrow the pillars of the internal ring. Bassini made much of this step, but many of his pupils have overlooked it. Cooper and Scarpa have also emphasized the importance of this fascial layer.

The conjoined tendon is then sutured to the shelving edge of Poupart's ligament with no. 30 or 40 interrupted cotton sutures. In the 2 large inguinal hernias which I re-

paired by reinforcement with an inlaid full-thickness skin graft, it was impossible to suture the conjoined tendon to Poupart's ligament without too much tension. These structures were approximated by carefully placed bridging sutures. The cremaster fascia was then closed with interrupted sutures of no. 80 cotton in its line of incision.

The graft is then prepared for placement (fig. 2, upper left and right). The ends are excised, and all subcutaneous tissue is dissected away. Then the broadest end—about .5 to .75 inch in width—is incised in its midpoint for a distance of approximately .75 inch. The graft is then laid in place with the incised end snugly surrounding the cord at the internal inguinal ring, reinforcing the muscular ring (fig. 2, lower left). Several interrupted sutures of no. 40 cotton are placed in the lower and lateral edge of the graft which is sutured to the extreme shelving edge of Poupart's ligament, care being taken to suture the graft in situ under extreme tension. The inferior pole of the graft may be trimmed and sutured well down over the fascia of the symphysis pubis, and the medial edge to the lateral aspect of the anterior sheath of the rectus muscle and the aponeurotic portion of the internal oblique muscle. Sutures are spaced .25 inch apart. The upper pole of the graft is sutured as near the reconstructed floor of the new inguinal canal as possible, in order to obliterate dead space (fig. 2, lower right). Mair used chromic catgut as suture material, while Cannaday recommended cotton. I have used interrupted cotton technique, triple throw style, although silk or stainless steel wire is satisfactory. Figure 3 illustrates the appearance of a graft in situ, used in the repair of an incisional or ventral hernia.

It is perhaps best to carry out the remainder of the repair for an inguinal hernia using the technique of Halsted, thus leaving no dead space surrounding the cord, as in employing the Bassini repair. The cord is thus transplanted to a subcutaneous position. Mair, however, in describing his technique, used a modified Bassini type of repair, utilizing a full-thickness skin graft to reinforce the floor of the canal and the internal inguinal ring. As previously stated, Cannaday advocated using a cutis graft from which the epidermis has been removed. A hip spica pressure dressing, using mechanic's waste or sea sponges, is then applied. Needless to say, strict hemostasis and asepsis are imperative. Early ambulation has been practiced, and the skin sutures are removed on the seventh or eighth postoperative day. The patient is dismissed in from twelve to fourteen days and his activity is restricted for from sixty to ninety days.


## SUMMARY

A preliminary report is submitted describing a technique advocated by Mair, in which full-thickness buried skin grafts are implanted in the repair of large or recurrent hernias. This technique is readily applicable to any type of hernia in which fascia would ordinarily be used to reinforce or bridge anatomic defects.

The complications and disadvantages of using fascia are hereby minimized.

Four cases are submitted in which full-thickness buried skin grafts were utilized in the repair of hernias in which fascia ordinarily would have been used. There have been no postoperative complications. The results in the first 3 have been satisfactory and there has been no recurrence after seventeen months. In the fourth case the immediate postoperative result is satisfactory but the ultimate outcome is indeterminate.

It is concluded that full-thickness skin graft repair gives promise of excellent results. It is superior in strength; it heals rapidly, apparently undergoing metaplasia and assuming the function of the part it replaces. Such grafts are readily available, are safer to use, and do not undergo cystic or malignant degeneration.


## REFERENCES


1. Beekman, F., and Sullivan, J. E.: Analysis of Immediate and Postgraduate Complications in 2,000 Cases of Inguinal Hernia, Surg., Gynec., & Obst. 68:1052-1059 (June) 1939.
2. Burdick, C. G.; Gillespie, D. H. M.; and Higinbotham, N. L.: Fascial Suture Operations for Hernia; Summary and End-Results of 1,485 Operations, Ann. Surg. 106:333-343 (Sept.) 1937.
3. Cannaday, J. E.: Some of Uses of Cutis Graft in Surgery, Am. J. Surg. 59:409-419 (Feb.) 1943.
4. Cannaday, J. E.: Additional Report on Some of Uses of Cutis Graft Material in Reparative Surgery, Am. J. Surg. 67: 382-390 (Feb.) 1945.
5. Cannaday, J. E.: Cutis Graft in Surgery; Review of Results Obtained, with Comments on Indications and Technique and Report of Cases, Arch. Surg. 52:286-303 (March) 1946.
6. Fallis, L. S.: Recurrent Inguinal Hernia; Analysis of 200 Operations, Ann. Surg. 106:363-372 (Sept.) 1937.
7. Gallie, W. E., and LeMesurier, A. B.: Living Sutures in Operative Surgery, Canad. M.A.J. 11:504 (July) 1921.
8. Grace, R. V., and Johnson, V. S.: Results of Herniotomy in Patients of More Than 50 Years of Age, Ann. Surg. 106: 347-360 (Sept.) 1937.
9. Iason, A. H.: Why Hernias Recur, Am. J. Surg. 72:550-561 (Oct.) 1946.
10. Loewe: Cited in Mair.[12]
11. McCloskey, J. F., and Lehman, J. A.: Living Fascial Suture in Repair of Large Inguinal Herniae, Ann. Surg. 111:610-617 (April) 1940.
12. Mair, G. B.: Use of Whole Skin Grafts As Substitute for Fascial Sutures in Treatment of Hernias; Preliminary Report, Am. J. Surg. 69:352-365 (Sept.) 1945.
13. Page, L. M.: Discussion on Hernia, Section of Surgery, Proc. Roy. Soc. Med. 36:185-186 (Feb.) 1943.
14. Peer, L. A.: Fate of Buried Skin Grafts in Man, Arch. Surg. 39:131-144 (July) 1939.
15. Rehn, E.: Das kutane und subkutane Bindegewede als plastisches material, Munchen. Med. Wchnschr. 61:118. 1914.


2711 Crocker.

## ABSTRACT OF DISCUSSION

**Dr. Elliott Hay,** Houston: It cannot be over emphasized that none of the various techniques of

herniorrhaphy is satisfactory if the principles of wound healing are not observed. Dr. Richeson has advocated this relatively new method as a substitute for the use of fascia in large or recurrent hernias and he has listed its advantages and limitations. The chief advantages over fascia seem to be the ease of procurement and the avoidance of muscle hernia. The early trials of this method resulted in a high incidence of wound sepsis but more recent reports by Mair have shown a much lower incidence of infection. Experiments with buried skin in animals have demonstrated the possibility of cyst formation, but from experiments of Paddock this seems less likely to occur in human beings.

This procedure has been performed in only a small number of cases and the follow-up period has been short. The final opinion as to its merits as a means of treatment of large and recurrent hernias must necessarily remain open until recurrence rates can be compared with those of other methods

## FASCIA-LATA TRANSPLANT IN REGRESSION OF RETROTARSAL FAT IN OPHTHALMOSTERESIS

W. O. MURPHY, M. D.
AMARILLO, TEXAS

A common defect which mars the cosmetic effect produced by a prosthesis in cases of simple enucleation is what I prefer to call a regression of retrotarsal fat, and what Dr. Spaeth[1] refers to as atrophy of the subepithelial tissue of the upper lid. These patients often have a distressing depression between the superciliary ridge and the normal curvature of the lid. Particularly to the younger patients, it gives great emotional discomfort about which they do not speak simply because the only thing offered them is a prosthesis, the fitting of which is too often relegated with a shrug to the employee of some optical company. It is this simple condition, one easily remedied, about which I wish to speak.

Dr. Spaeth's book[1] says, "The incision for filling out a thinned atrophic upper lid should lie in the upper outer angle of the lid following the normal curve of the bony orbit. In position it is to be just external to the line of the external canthus passing across this line at an angle of 30 degrees with its lower extremity inclined away from the canthus. This incision needs to be only 2 cm. in maximum length for the introduction of the graft, otherwise the graft will tend to protrude and to be caught in the suture line while the incision is being closed. Dissection is carried backward into the depth of the orbit and along the entire line of the upper lid toward the nose. It is best done with blunt-pointed scissors. The ease with which this dissection is done makes the small incision possible. After the skin has been lifted, the muscle and fascia, with the fascia uppermost, can be introduced into this slit-like opening and smoothed out with the side of a pair of forceps." I believe that physicians following this description will not meet with great success in their operative interference.

The surgical principles necessary are simple but must be adhered to explicitly. The incision should not be more than 1 cm. in length; its location will depend on the configuration of the patient's face. Often the original incision must be as far as 1 to 2 cm. temporal to the external canthus. It will always be immediately inferior to the superior orbital rim. The incision is made through skin and orbicularis muscle to the periosteum. A tunnel is then created from this small incision immediately posterior to the orbicularis muscle, immediately inferior to the superior orbital rim, and immediately anterior to the orbital septum. In this relative position it is carried nasally to a point either directly above or slightly nasal to the internal canthus, usually directly inferior to the nasal extremity of the supercilium. Always the point of the scissors at the termination of the creation of this tunnel will lie against the periosteum of the superior orbital rim. The points of the scissors are separated slightly thus creating moderate tension in the skin and a knife incision is made at this point through skin and orbicularis muscle. The tunnel is then extended nasally a few millimeters from the nasal incision and temporally a few millimeters from the temporal incision. Following the creation of this tunnel pressure should be applied until all bleeding has ceased. I have found it efficacious to pass an instrument back through the tunnel after all hemorrhage has apparently stopped to be positive that bleeding would not be excited by this trauma. I have also found it desirable to take the fascia after this work, thus allowing even a longer time for the suppression of bleeding.

The fascia may, of course, be taken in any one of many ways, none of which is difficult. Anesthesia is simply created by the subcutaneous injection of novocaine along the intended line of fascial removal. I have usually begun this injection 3 or 4 inches above the knee on the temporal side of the thigh and extended it 10 or 12 inches superiorly. An incision some 3 inches in length is then made through skin and subcutaneous tissue to the fascia lata. The plane of this incision should be parallel to the femur.

Read before the Section on Eye, Ear, Nose, and Throat, State Medical Association of Texas, Annual Session, Dallas, May 7, 1947.

Assuming that the width of the strip of fascia desired is 5 inches, an incision through the fascia and at right angles to the skin incision is then made. The termination of this original fascia incision is then extended at right angles to it and parallel to the incision made in the skin with the knife. Scissors are introduced into the wound and the subcutaneous tissue is separated from the fascia as far superiorly as is possible. A clover-leaf shaped instrument is then used to extend the fascial strip which has already been started. The fascia stripper is then inserted into the wound and the strip of fascia from .5 to .75 inch in width and from 8 to 10 inches in length is removed.

This fascial strip is then spread out on a towel and all of the extraneous connective tissue is removed by vigorous rubbing with a moist piece of gauze. It is then grasped in the middle with a pair of forceps and held in the air so that it may be cut into many fine strips. It is important to clean the fascia of the extraneous connective tissue because if it is left a considerable reaction will often take place. I suppose this is true because of the inflammatory reaction excited by the absorption of this foreign cellular detritus. It is important that the fascia be cut into many thin strips that it may be molded into the proper position.

This stripped fascia is then draped over two strong sutures. An aneurysm needle is passed through the tunnel in the eyelid, the point being inserted at the nasal incision and brought out the temporal incision where the sutures are engaged and pulled through the tunnel. In turn, the fascia is thus pulled into the tunnel with the two ends of the folded fascia extending out the wounds. These two ends are grasped with heavy forceps and thus crushed. The unnecessary length is cut away in a sloping manner so that the fascia ends in a point. These points of fascia are then tucked into the little extension of the tunnel at either end. For a better closure of the wound and to avoid any possibility of a small strand of the fascia finding its way to the skin surface through the margins of the muscle wound, so creating a dimple at this site, the orbicularis muscle is sutured with plain 0 catgut and the skin then closed with 6-0 Deknatel.

With the fingers the fascia is now molded into the proper position, a properly fitting prosthesis, conformer, or mold of dental stent is placed in the socket, and a firm pressure dressing is applied. Effective plastic surgery about the face depends to a great extent on pressure. Though I have seen many dressings placed upon an eye, I do not believe there is any quite as useful as the old well-tried Wheeler pressure dressing.

I would like in closing to point out the importance of the few principles outlined here:

1. If the fascia is not placed immediately beneath the inferior orbital rim, it will often migrate in the first few days inferiorly, making the lid heavy and unsightly.

2. If the fascia, including the ends, is not carefully placed beneath the orbicularis muscle, there will be a distortion and dimpling of the skin which has no relationship to a satisfactory cosmetic appearance.

3. If the fascia is not placed anterior to the orbital septum, it will migrate posteriorly into the orbit and in as little time as one month all cosmetic value will have been lost.

4. If the fascia is not cleaned of all extraneous material, a considerable reaction often will result. I may safely say that any reaction at the site of surgery is not normal or necessary.

5. If the fascia is not stripped, it will be impossible to mold it into proper position.

6. If hemorrhage is not completely controlled, the implant may be dislocated because of a large hematoma.

7. If a firm pressure dressing is not applied over a properly fitting prosthesis, there may be migration inferiorly.

812 Fisk Medical and Professional Building.

REFERENCE

1. Spaeth, E. B.: Principles and Practice of Ophthalmic Surgery, ed. 3, Philadelphia, Lea and Febiger, 1944.

ABSTRACT OF DISCUSSION

**Dr. E. D. McKay,** Temple: This interesting and frequently seen orbital defect has been well handled by Dr. Murphy. In 1943 and 1944, I had occasion to do some of this work and searched literature for procedures in the repair of this trouble. This search revealed a lack of detail in the correct use of fascia lata as a repairing medium.

There are two points in Dr. Murphy's procedure I would like to emphasize. The first is the meticulous cleaning of the transplant. After the surgeon has scraped it clean and considers it to be ready, he should scrape it a couple of extra times. It is much easier than removing the fascia later because of reaction, which will and does occur if it is not well cleaned. The second is making the thin strips in the fascia. This is most important, for by so doing, the bulk is reduced, there is still less reaction to the transplant that has been shredded, and it will stay in place better.

**Dr. Maxwell Thomas,** Dallas: This concise presentation in the use of fascia lata in ophthalmosteresis is welcome. After attempting the use of fascia lata transplants I found it was the little technical procedures, so well presented by Dr. Murphy, which spelled success or failure. During the war I saw many of these cases, and at the Naval hospital where I was stationed a number of transplants were done.

# NASAL AND POSTOPERATIVE TONSIL AND ADENOID HEMORRHAGE

## PREVENTION AND CONTROL

CHARLES E. BALL, M. D.
FORT WORTH, TEXAS

Nasal hemorrhage may be spontaneous, traumatic, or postoperative, whereas tonsil and adenoid hemorrhage is usually postoperative. Such postoperative hemorrhage may be primary, occurring during the first twenty-four hours, or secondary, usually seen from the fifth to the twelfth postoperative day. Until the last few years there was little knowledge as to the exact etiology of such hemorrhage and it was considered to be an unavoidable nuisance to both surgeon and patient. Although there is still considerable disagreement as to the processes involved in blood coagulation, many believe that the prevention and control of postoperative hemorrhage is now much nearer a happy solution.

### NASAL HEMORRHAGE

In the consideration of nasal hemorrhage the blood supply of the nasal mucosa should be recalled. The chief source of supply is from the sphenopalatine and facial arteries which are derived from the external carotid artery. Approximately the upper one-fourth of the nasal mucosa is supplied by the anterior and posterior ethmoidal arteries which are branches of the ophthalmic artery, the latter springing from the internal carotid artery.

The prevention of nasal hemorrhage is frequently impossible except in the postoperative type. The preoperative measures employed in tonsil and adenoid surgery apply equally well in nasal surgery and will be discussed later.

The control of nasal hemorrhage depends on its etiology. Simple epistaxis results from a break in the terminal branches of the sphenopalatine artery or the accompanying veins. It may result from ulceration of any portion of the nose but most commonly the nasal septum is involved and usually in the anterior lower part known as Kiesselbach's area. Such ulceration may be of traumatic origin or may be due to syphilis, tuberculosis, leprosy or neoplasms, both malignant and nonmalignant. Mild to severe epistaxis is common in acute infectious diseases, cardio-vascular-renal disease, cirrhosis of the liver, bronchitis, hemophilia, purpura, pernicious anemia, leukemia, and many others. Variations in the elasticity of the blood vessel walls encountered in some of the above diseases is an important factor.

Each physician has his own favorite method of controlling nasal hemorrhage. I shall outline my method and others which are, no doubt, equally effective. Slight or moderate bleeding is usually controlled by a cotton pack saturated with equal parts of 2 per cent pontocaine and 1:1,000 adrenalin chloride. The area is then touched with 50 per cent silver nitrate, Monsell's solution, or the electro-cautery. Care should be taken to treat the smallest area possible to check the bleeding.

Monson injected small amounts of saturated solution of quinine lactate at the site of hemorrhage. Riggs used a similar injection of quinine urea hydrochloride. Poult advised pinching the nose with a clothes pin until the bleeding ceases. Jackson and Coates used the chromic acid bead. Millet used a cotton glove finger, lubricated and placed in the nose, after which the finger was packed with gauze. Canuyt irradiated various remote regions of the body. Stevens used the rubber balloon pack. The use of a salt pork pack has long been preferred by some. In 1931 Peck first described the use of moccasin snake venom in intractable nasal hemorrhage. The use of ice compresses in conjunction with other methods is of value. In all cases elevation of the head or keeping the patient in a sitting position takes some pressure from the bleeding vessel. Electro-coagulation and electrocauterization may be employed when the bleeding point is visible. Recurrent epistaxis can frequently be treated successfully by Koagamin, a synthetic coagulant compound of oxalic and malonic acids. It is also of value preoperatively, 2 cc. being given intravenously or intramuscularly from one-half to one hour before the operation. In postoperative hemorrhage 2 cc. may be given intravenously, followed by 2 cc. intramuscularly every hour if needed. A maintenance dose of 2 cc. intramuscularly daily until healing has occurred is sometimes advisable. Hollander advised the use of a freshly prepared mixture of equal parts of antipyrine and tannic acid. The rubbery precipitate may be introduced into the nose on tampons and left for several days. If the hemorrhage is not too severe it may be checked with vaseline gauze strips which should be removed in from two to four hours. The use of vitamin K and ascorbic acid will be discussed under the control of tonsil and adenoid bleeding.

Nasal hemorrhage may at times become persistent, requiring more radical treatment.

Read before the Section on Eye, Ear, Nose, and Throat, State Medical Association of Texas, Annual Session, Houston, April 28, 1948.

Assuming that the width of the strip of fascia desired is 5 inches, an incision through the fascia and at right angles to the skin incision is then made. The termination of this original fascia incision is then extended at right angles to it and parallel to the incision made in the skin with the knife. Scissors are introduced into the wound and the subcutaneous tissue is separated from the fascia as far superiorly as is possible. A clover-leaf shaped instrument is then used to extend the fascial strip which has already been started. The fascia stripper is then inserted into the wound and the strip of fascia from .5 to .75 inch in width and from 8 to 10 inches in length is removed.

This fascial strip is then spread out on a towel and all of the extraneous connective tissue is removed by vigorous rubbing with a moist piece of gauze. It is then grasped in the middle with a pair of forceps and held in the air so that it may be cut into many fine strips. It is important to clean the fascia of the extraneous connective tissue because if it is left a considerable reaction will often take place. I suppose this is true because of the inflammatory reaction excited by the absorption of this foreign cellular detritus. It is important that the fascia be cut into many thin strips that it may be molded into the proper position.

This stripped fascia is then draped over two strong sutures. An aneurysm needle is passed through the tunnel in the eyelid, the point being inserted at the nasal incision and brought out the temporal incision where the sutures are engaged and pulled through the tunnel. In turn, the fascia is thus pulled into the tunnel with the two ends of the folded fascia extending out the wounds. These two ends are grasped with heavy forceps and thus crushed. The unnecessary length is cut away in a sloping manner so that the fascia ends in a point. These points of fascia are then tucked into the little extension of the tunnel at either end. For a better closure of the wound and to avoid any possibility of a small strand of the fascia finding its way to the skin surface through the margins of the muscle wound, so creating a dimple at this site, the orbicularis muscle is sutured with plain 0 catgut and the skin then closed with 6-0 Deknatel.

With the fingers the fascia is now molded into the proper position, a properly fitting prosthesis, conformer, or mold of dental stent is placed in the socket, and a firm pressure dressing is applied. Effective plastic surgery about the face depends to a great extent on pressure. Though I have seen many dressings placed upon an eye, I do not believe there is any quite as useful as the old well-tried Wheeler pressure dressing.

I would like in closing to point out the importance of the few principles outlined here:

1. If the fascia is not placed immediately beneath the inferior orbital rim, it will often migrate in the first few days inferiorly, making the lid heavy and unsightly.

2. If the fascia, including the ends, is not carefully placed beneath the orbicularis muscle, there will be a distortion and dimpling of the skin which has no relationship to a satisfactory cosmetic appearance.

3. If the fascia is not placed anterior to the orbital septum, it will migrate posteriorly into the orbit and in as little time as one month all cosmetic value will have been lost.

4. If the fascia is not cleaned of all extraneous material, a considerable reaction often will result. I may safely say that any reaction at the site of surgery is not normal or necessary.

5. If the fascia is not stripped, it will be impossible to mold it into proper position.

6. If hemorrhage is not completely controlled, the implant may be dislocated because of a large hematoma.

7. If a firm pressure dressing is not applied over a properly fitting prosthesis, there may be migration inferiorly.

812 Fisk Medical and Professional Building.

REFERENCE

1. Spaeth, E. B.: Principles and Practice of Ophthalmic Surgery, ed. 3, Philadelphia, Lea and Febiger, 1944.

ABSTRACT OF DISCUSSION

**Dr. E. D. McKay,** Temple: This interesting and frequently seen orbital defect has been well handled by Dr. Murphy. In 1943 and 1944, I had occasion to do some of this work and searched literature for procedures in the repair of this trouble. This search revealed a lack of detail in the correct use of fascia lata as a repairing medium.

There are two points in Dr. Murphy's procedure I would like to emphasize. The first is the meticulous cleaning of the transplant. After the surgeon has scraped it clean and considers it to be ready, he should scrape it a couple of extra times. It is much easier than removing the fascia later because of reaction, which will and does occur if it is not well cleaned. The second is making the thin strips in the fascia. This is most important, for by so doing, the bulk is reduced, there is still less reaction to the transplant that has been shredded, and it will stay in place better.

**Dr. Maxwell Thomas,** Dallas: This concise presentation in the use of fascia lata in ophthalmosteresis is welcome. After attempting the use of fascia lata transplants I found it was the little technical procedures, so well presented by Dr. Murphy, which spelled success or failure. During the war I saw many of these cases, and at the Naval hospital where I was stationed a number of transplants were done.

# NASAL AND POSTOPERATIVE TONSIL AND ADENOID HEMORRHAGE

## PREVENTION AND CONTROL

CHARLES E. BALL, M. D.
FORT WORTH, TEXAS

Nasal hemorrhage may be spontaneous, traumatic, or postoperative, whereas tonsil and adenoid hemorrhage is usually postoperative. Such postoperative hemorrhage may be primary, occurring during the first twenty-four hours, or secondary, usually seen from the fifth to the twelfth postoperative day. Until the last few years there was little knowledge as to the exact etiology of such hemorrhage and it was considered to be an unavoidable nuisance to both surgeon and patient. Although there is still considerable disagreement as to the processes involved in blood coagulation, many believe that the prevention and control of postoperative hemorrhage is now much nearer a happy solution.

### NASAL HEMORRHAGE

In the consideration of nasal hemorrhage the blood supply of the nasal mucosa should be recalled. The chief source of supply is from the sphenopalatine and facial arteries which are derived from the external carotid artery. Approximately the upper one-fourth of the nasal mucosa is supplied by the anterior and posterior ethmoidal arteries which are branches of the ophthalmic artery, the latter springing from the internal carotid artery.

The prevention of nasal hemorrhage is frequently impossible except in the postoperative type. The preoperative measures employed in tonsil and adenoid surgery apply equally well in nasal surgery and will be discussed later.

The control of nasal hemorrhage depends on its etiology. Simple epistaxis results from a break in the terminal branches of the sphenopalatine artery or the accompanying veins. It may result from ulceration of any portion of the nose but most commonly the nasal septum is involved and usually in the anterior lower part known as Kiesselbach's area. Such ulceration may be of traumatic origin or may be due to syphilis, tuberculosis, leprosy or neoplasms, both malignant and nonmalignant. Mild to severe epistaxis is common in acute infectious diseases, cardio-vascular-renal disease, cirrhosis of the liver, bronchitis, hemophilia, purpura, pernicious anemia, leukemia, and many others. Variations in the elasticity of the blood vessel walls encountered in some of the above diseases is an important factor.

Each physician has his own favorite method of controlling nasal hemorrhage. I shall outline my method and others which are, no doubt, equally effective. Slight or moderate bleeding is usually controlled by a cotton pack saturated with equal parts of 2 per cent pontocaine and 1:1,000 adrenalin chloride. The area is then touched with 50 per cent silver nitrate, Monsell's solution, or the electro-cautery. Care should be taken to treat the smallest area possible to check the bleeding.

Monson injected small amounts of saturated solution of quinine lactate at the site of hemorrhage. Riggs used a similar injection of quinine urea hydrochloride. Poult advised pinching the nose with a clothes pin until the bleeding ceases. Jackson and Coates used the chromic acid bead. Millet used a cotton glove finger, lubricated and placed in the nose, after which the finger was packed with gauze. Canuyt irradiated various remote regions of the body. Stevens used the rubber balloon pack. The use of a salt pork pack has long been preferred by some. In 1931 Peck first described the use of moccasin snake venom in intractable nasal hemorrhage. The use of ice compresses in conjunction with other methods is of value. In all cases elevation of the head or keeping the patient in a sitting position takes some pressure from the bleeding vessel. Electro-coagulation and electrocauterization may be employed when the bleeding point is visible. Recurrent epistaxis can frequently be treated successfully by Koagamin, a synthetic coagulant compound of oxalic and malonic acids. It is also of value preoperatively, 2 cc. being given intravenously or intramuscularly from one-half to one hour before the operation. In postoperative hemorrhage 2 cc. may be given intravenously, followed by 2 cc. intramuscularly every hour if needed. A maintenance dose of 2 cc. intramuscularly daily until healing has occurred is sometimes advisable. Hollander advised the use of a freshly prepared mixture of equal parts of antipyrine and tannic acid. The rubbery precipitate may be introduced into the nose on tampons and left for several days. If the hemorrhage is not too severe it may be checked with vaseline gauze strips which should be removed in from two to four hours. The use of vitamin K and ascorbic acid will be discussed under the control of tonsil and adenoid bleeding.

Nasal hemorrhage may at times become persistent, requiring more radical treatment.

Read before the Section on Eye, Ear, Nose, and Throat, State Medical Association of Texas, Annual Session, Houston, April 28, 1948.

Nasal and postnasal packs should be avoided whenever possible. Here I would like to sound a warning regarding the use of oxidized cellulose gauze in the nose. If used at all it should be thoroughly soaked with thrombin and not packed too tightly. I have had 2 cases of septal perforation with a previously intact septal cartilage following the use of this gauze. If packs are deemed necessary, I employ .5 inch plain gauze or cotton. If I anticipate packing the entire nostril, the first 6 inches of gauze is saturated with a solution of 1 part Monsell's solution to 3 parts 1:1,000 adrenalin chloride. I have been unable to obtain oxidized cellulose cotton, but I understand it is much less irritating than any gauze and, like oxidized gauze, it does not have to be removed. In those cases in which the bleeding point is not visible it can sometimes be located with the naso-pharyngoscope after bleeding has been temporarily checked with adrenalin chloride.

Occasionally traumatic nasal hemorrhage presents a serious problem and requires prompt action. One of my cases of a few years ago will illustrate this point.

V. L., a 26 year old man, was struck on the forehead by a cotton seed crusher in a cotton oil mill. He was brought to the hospital bleeding profusely from both nostrils. No fracture could be demonstrated. Nasal and postnasal packs checked the hemorrhage briefly; then blood would fill an emesis basin in a few minutes through the packs. The bleeding points could not be seen. Within a few days four transfusions were necessary. It was then decided to ligate the left external carotid artery. This was done without any notable cessation in the bleeding. The left common carotid artery was then ligated and within a few minutes he bled about 8 ounces from the left nostril. More transfusions followed and the patient made a stormy recovery complicated by bilateral acute suppurative otitis media and acute mastoiditis requiring operation.

Here the break was probably in one of the ethmoidal arteries and some hemorrhage occurred immediately after ligation of the common carotid because of the anatomic efficiency of the circle of Willis. Ligation of the anterior and posterior ethmoidal arteries would probably have been the better procedure.

In nose and throat hemorrhage the value of thromboplastic agents is doubtful. It is difficult to keep fibrin foam in contact with the affected area long enough to be effective. Small transfusions are of value in many cases as are intramuscular injections of 10 cc. of the patient's own blood or that of a donor.

### POSTOPERATIVE TONSIL AND ADENOID HEMORRHAGE

The pharyngeal and faucial tonsils are supplied by the lingual, internal maxillary, ascending and descending pharyngeal, and palatine arteries, ultimate branches of the external carotid. They anastomose freely around the faucial tonsils and in the nasopharynx and are not always constant.

Prior to a tonsillectomy and/or adenoidectomy a complete blood count and determination of bleeding time, coagulation time, prothrombin time, and ascorbic acid content are desirable although not always practicable. Certainly a blood count and coagulation time test should be done and a careful history as to previous bleeding should be taken. It is disconcerting to the surgeon to have the patient inform him just after the operation that it was necessary to give him a transfusion a few months previously following the extraction of a tooth.

Dr. Harry Neivert and Professor John D. Kernan, at the Pharyngology Research Laboratory of Columbia University, have contributed some valuable information regarding postoperative tonsil and adenoid hemorrhage. Similar work has been done by Dr. Rudolf Singer, formerly of Vienna, as well as by others who noted the much greater percentage of postoperative tonsil and adenoid hemorrhage in the United States as compared with that encountered in Europe. In comparing postoperative procedures employed here and abroad, it was observed that while great quantities of acetylsalicylic acid are consumed in the United States, the drug of choice in central Europe is aminopyrine. Considering all reports available, secondary hemorrhage occurs in from 5 to 10 per cent of the cases. Neivert was able to reduce the incidence of secondary hemorrhage to 1.4 per cent in 283 cases by the addition of vitamin K to acetylsalicylic acid following tonsillectomy and adenoidectomy.

The isolation of vitamin K in relatively pure form by Dam in 1939 is a triumph of modern chemistry. He designated it the "Koagulations Vitamin" or vitamin K. The subsequent discovery of the various quinones with vitamin K activity gave us among other preparation, synkayvite, which has proved valuable in restoring plasma prothrombin to normal level. This effect is reduced in liver damage and following the use of salicylates, sulfonamides, and certain anticoagulants such as dicumarol. In such cases a prothrombin determination is essential before and after the administration of vitamin K prior to surgery. A new method of prothrombin determination employing thromboplastin maltine has greatly facilitated this procedure.

Considering the work which has been done by Neivert, Singer, Rapaport, Meyer, Camp-

bell, and a number of others, physicians cannot ignore the fact that the administration of salicylates produces hypoprothrombinemia and hypocoagulability of the blood. Inquiry should be made regarding the ingestion of such drugs prior to nose and throat surgery. If such drugs have been taken, a prothrombin determination should be done. If possible, salicylates are eliminated and the patient is given synkayvite (tetrasodium methyl-1, 4-naphthahydroquinone diphosphoric acid ester tetrasodium salt) 20 mg. daily for five days prior to surgery.

It is hardly tenable that one particular instrument or technique is superior to all others in performing a clean operation with a minimum of trauma. There is no doubt that excessive trauma predisposes the patient to avoidable hemorrhage and that such trauma should be avoided. A dry field should, of course, be obtained before the patient leaves the table. I prefer to suture all vessels which show a cut end or which have been damaged.

Occasionally excessive adenoid bleeding is encountered either before the patient leaves the table or within a few hours. Postnasal packs should be avoided if possible. For several years I have employed a postnasal injection, using a curved tonsil needle, of 1 per cent procaine with 30 drops of 1:1,000 adrenalin chloride to the ounce. This dries the field and the application of a small amount of Monsell's solution to the area usually keeps it dry. Seldom is it necessary to repeat this injection. I infrequently employ a general anesthetic to carry out this procedure in children when the hemorrhage occurs some time after the operation. The same injection is made in postoperative tonsil bleeding in children and adults. Usually no suture is required but if needed the field is already fairly dry and the area anesthetized.

Since it seems evident that the use of acetylsalicylic acid following tonsillectomy and/or adenoidectomy definitely produces hypocoagulability of the blood, I consistently use postoperative sedatives.

For children I prefer a suppository containing phenobarbital .06 Gm., menadione 12 mg., ascorbic acid 100 mg., and acetylsalicylic acid .3 mg. (Alcon Laboratories, Inc.). These may be used every six to eight hours as necessary. After the first two days a tablet of menacyl two or three times daily is usually sufficient. Menacyl consists of acetylsalicylic acid 0.33 Gm., menadione 0.33 mg., and ascorbic acid 33.3 mg.

For larger children and adults I use a powder containing codeine .03 to .05 GM., phenobarbital .05 Gm., synkayvite 12 mg., ascorbic acid 100 mg., and acetylsalicylic acid .6 Gm. This powder is also used following nasal surgery. In cases where codeine is not needed or not tolerated I give adults two menacyl tablets several times daily. In severe hemorrhage the use of morphine is indicated provided it does not produce vomiting.

Prior to the use of menadione and synkayvite I did not keep accurate records of secondary postoperative hemorrhage, but I am sure the incidence was at least between 5 and 10 per cent of all cases of tonsillectomy and/or adenoidectomy. In 100 consecutive cases using the above suppository and powder I have had 4 secondary adenoid hemorrhages occurring from the second to the sixth postoperative day and none of any consequence. In this same 100 cases I had 1 postoperative tonsil hemorrhage on the fourth postoperative day which required one injection of novocaine and adrenalin to control.

I have not often encountered postoperative nasal hemorrhage but at times it has been annoying and severe. Since I have been using this sedative powder I have had no postoperative hemorrhage in 42 cases, which included submucous resections, intranasal sinus operations, and removal of nasal polyps.

## SUMMARY

Some of the problems in the prevention and control of nose and throat hemorrhage have been stated and some methods employed to combat these problems have been described. Hypoprothrombinemia may be induced by the ingestion of the salicylates and can be overcome by the use of vitamin K. The use of vitamin C before and after surgery aids the healing process and reduces postoperative hemorrhage.

## REFERENCES

1. Allen, J. G.: Clinical Experience with Water Soluble Vitamin K-Like Substance (tetrasodium 2-methyl-1, 4 naphthohydroquinone diphosphoric acid ester), Am. J. M. Sc. 205:97-102 (Jan.) 1943.
2. Cheney, G.: Normal Plasma Coagulation Time, Am. J. M. Sc. 203:325-333 (March) 1942.
3. Cone, A. J.: Use of Salt Pork in Cases of Hemorrhages, Arch. Otolaryng. 32:941-946 (Nov.) 1940.
4. Dack, S.: Treatment of Intractable Nasal Hemorrhage by Injections of Moccasin Snake Venom, J.A.M.A. 105:412-413 (Aug. 10) 1935.
5. Davison, M.; Steigmann, F.; and Udesky, H. L.: Clinical Studies on Antihemorrhagic Effects of New Water Soluble Vitamin K-Like Substance, Surg., Gynec. & Obst. 74:35-40 (Jan.) 1942.
6. Ford, W. A.: Modification of Steven's Rubber Nasal Balloon Pack, Ann. Otol., Rhin. & Laryng. 49:965-966 (Dec.) 1940.
7. Goodyear, H. M.: Etiology and Treatment of Hemorrhage of Nose and Throat; Practical Considerations in Relation to Otolaryngology, J.A.M.A. 107:337-342 (Aug. 1) 1936.
8. Houser, K. M.: Oxidized Cellulose Gauze Packing for Nasal Bleeding, J.A.M.A. 132:143 (Sept. 21) 1946.
9. Monson, L. P.: Treatment of Nasal Hemorrhages by Use of Sclerosing Solutions, Arch. Otolaryng. 23:487-488 (April) 1936.
10. Neivert, H.: Late Secondary Tonsillar Hemorrhage; Studies of Prothrombin and Vitamin K, Arch. Otolaryng. 42:14-18 (July) 1945.

11. Neivert, H.; Pirk, L. A.; and Engelberg, R.: Secondary Tonsillar Hemorrhage; Studies of Ascorbic Acid, Arch. Otolaryng. 43:568-577 (June) 1946.
12. Preston, H. G.: Delayed Tonsillar Hemorrhage, Virginia M. Monthly 73:252-256 (June) 1946.
13. Shapiro, S.; Redish, M. H.; and Campbell, H. A.: Studies on Prothrombin; Prothrombinopenic Effect of Salicylate in Man, Proc. Soc. Exper. Biol. & Med. 53:251-254 (June) 1943.
14. Singer, R.: Acetylsalicylic Acid, Probable Cause for Secondary Posttonsillectomy Hemorrhage, Arch. Otolaryng. 42:19-20 (July) 1945.
15. Spar, A. A., and Hallberg, O. E.: Severe Epistaxis and Its Management; Report of 11 Cases in Which External Carotid Artery Was Ligated, Ann. Otol., Rhin. & Laryng. 56:141-151 (March) 1947.
16. Weddell, G.; Macbeth, R. G.; Sharp, H. S.; and Calvert, C. A.: Surgical Treatment of Severe Epistaxis in Relation to Ethmoidal Arteries, Brit. J. Surg. 33:387-392 (April) 1946.

1405 Medical Arts Building.

## ABSTRACT OF DISCUSSION

**Dr. Palmer M. Archer,** Houston: In presenting this paper on the prevention and control of nose and throat hemorrhage, the essayist has given a masterly resume of the newer methods of influencing the coagulability of blood and has added just enough personal observation to make the subject instructive. It is regrettable that he did not deal a little more with the behavior of the blood vessels themselves. Surgical wounds are either dry or moist; the conduct of the former is rather academic, but the latter offers difficulties.

Let us assume we are dealing with an operative tonsil fossa. Normally, when blood vessels are severed and the larger ones controlled, the smaller ones and the capillaries immediately retract into the underlying tissues where they remain for a period of time varying from moments to two hours, after which they attempt to regain their original position. It is in this interval that the intravascular and extravascular elements mingle to produce coagulation. As the clot organizes, the soft pliable vessels become immobilized and the blood serum is squeezed out. The surgeon helps this situation by sponge pressure, or, if he thinks the extirpated tonsil will act like muscle tissue in adding thromboplastic elements, he may use it in lieu of the sponge. Vessels lacking in elasticity tend to return to the wound surface. Surgeons have all left a tonsil fossa dry only to return in a few moments to find it bathed in blood. This phenonomen may be a caution against too much speed in operating. Bleeders, crushed or tied, do not enjoy the benefit of muscle enzymes, but must depend solely on their own contained clots. For this reason sutures should assure a flatter wound. Shreds of veins and vessels rent in continuity should be excised since contraction occurs only in lengthwise fashion. Fragments of tonsils and adenoid offer poor security for injured vessels. A clean smooth fossa presents little stubble for incorporation in the protective coagulum, so if the latter becomes rolled up during convalescence, no uncapped vessels should be available for the brisk bleeding so often encountered.

Postoperative hemorrhages after the fifth day, at the time that tenderness is rapidly disappearing from the wound and indiscretions in diet and exercise are likely to occur, are probably traumatic. However, Dr. John Shea believes this complication to be due to invasion of the wound by the Vincent group of organisms and uses sodium cacodylate preoperatively and postoperatively; others employ bismuth by suppository or injection. If this theory be correct, penicillin should be the drug of choice.

Spontaneous hemorrhage, from even the obvious anterior septum, can be troublesome, and if it is repeated often, the physician should not rely on the cautery alone. It is far better to elevate the septal mucous membrane and even resect a segment of cartilage in order to allow sufficient slack for the contraction of the offending vessel. In profuse nasal hemorrhage excessive shrinking may obscure the bleeding point, with recurrence likely sometime later. It is more scientific in such cases to pack by tiers so that after twelve hours the layers may be patiently and cautiously removed, thus, uncovering the offending area. In 2 cases of intractable bleeding, under the inferior turbinate, only transantral approach permitted control of the situation. An ulcerating malignancy was found in one instance. It should be emphasized that where the ligation of vessels is demanded, the terminal branches should be attacked before the main trunks. Only once have I found it necessary to tie an internal carotid; the patient immediately developed hemiplegia and died in a few days. Patients with excessive hypertension are not desirable surgical risks. A man with a blood pressure of over 200 developed recurrent bleeding from a tonsil. Since malignancy was feared, operation seemed imperative; after freely bleeding him some hours prior to surgery, the tonsil was removed without mishap, either on the table or after.

# TREATMENT OF FRACTURES IN GENERAL PRACTICE

L. C. POWELL, M. D.
BEAUMONT, TEXAS

One of the major principles in treating fractures is not to get in too big a hurry to set the bones. At first examination of the patient the physician may be at a loss to know what is the best thing to do in this particular case. If the patient is in a state of shock, it is far more important to treat the shock rather than the fracture. Whenever the degree of shock is out of proportion to the fracture, the physician should always carefully examine the patient for some serious injury other than the fracture. There are plenty of cases on record where the doctor wasted his time treating the fracture while the patient was dying from shock. Blood plasma is beneficial in treating shock, in addition to the other usual measures such as keeping the patient warm with blankets, administering morphine for pain, and requiring absolute rest in bed with the foot of the bed elevated. Severely shocked patients, especially those with multiple injuries, may recover from shock in a few minutes if the fracture sites are injected with .5 per cent novocaine solution, whereas if a general anesthetic is given, the patient may die on the fracture or operating table.

When possible, roentgenograms should be made of all fractures before and after reduction, not only because of the great help in the proper treatment of a fracture, but also for a permanent record, as many patients go to court, especially in industrial cases, and there is always the possibility of a libel suit against the physician for malpractice. Another roentgenogram should be taken on the removal of fixation splints or the application of a fresh plaster cast, and a final picture

Read before the Section on General Practice, State Medical Association of Texas, Annual Session, Houston, April 28, 1948.

at the end of treatment. The roentgenogram can be used as proof that the bone is really broken. Often some member of the family says, "Doctor, the bone is not broken is it? Just fractured a little?" Many do not seem to know the exact meaning of the word fracture. There should be both anterior-posterior and lateral view roentgenograms as a fracture may look good in one view and bad in the other. Even the best roentgenograms are valueless if the doctor who makes them is not able to read them, and if he is unable to do so, he should get some competent radiologist to interpret them for him. Sometimes valuable information in fractures, especially in children, can be obtained by making roentgenograms of the bones of the uninjured side for comparison.

It many instances the patient cannot afford a roentgenogram or he must be carried a considerable distance to obtain one. There are many cases in which a satisfactory diagnosis can be made from the subjective symptoms: history of the case, pain, and tenderness, and the objective symptoms: deformity, swelling, ecchymosis, abnormal mobility, and crepitus. However, the general practitioner should insist upon having a roentgenogram where there is the slightest doubt in his own mind as to the diagnosis, and he should never ignore the patient's request for a roentgenogram even when he is satisfied that it is not necessary, because none of us is infallible. A doctor is apt to be sorry that he did not obtain a roentgenogram immediately in certain instances, but he will never regret having obtained one. Some doctors prefer to use the fluoroscope instead of the roentgen ray. Those who prefer to use the fluoroscope should remember not to use too violent a force in attempting to get exact anatomic end to end apposition and should also bear in mind the danger of roentgen-ray burns to their hands.

In treating compound fractures, the wound should be thoroughly cleansed before any attempt is made at reduction of the fracture. Frequently, pieces of clothing, grass, gravel, and other foreign material are caught in the jagged and rough ends of bone and are ground deep into the soft tissues. Several years before the discovery of the sulfa drugs and penicillin, I had the pleasure of hearing Dr. John J. Moorhead, associate professor of surgery, New York Post Graduate Medical School and Hospital (who wrote a good book on traumatic surgery), lecture on compound fractures. He emphasized the proper use of soap and water by saying, "I use soap and water, soap and water, soap and water, and more soap and water, and then I do not care what color of lipstick or bluing you use on the wound" (referring to mercurochrome, merthiolate, mercresin, gentian violet, and so forth).

In compound wounds all bruised and torn edges should be cut away. The wound may be closed with sutures in some cases. However, it is dangerous to close a wound without first removing all tissues the vitality of which has been injured. It is not enough to trim up to the skin edges and suture as severe cellulitis, gas gangrene, tetanus, or edema may result. When large masses of muscle have been injured by direct crushing and deep cavities remain, a drainage tube should be inserted and left for two or three days. Such drains should not be brought up through the wound, but through a fresh opening in healthy skin, and should also be brought through the most dependent part.

Often the severest crushing injuries can be treated without amputation providing the limb is warm and a pulse can be felt. The wound should remain exposed. This can be done by bridging the cast. I am of the opinion that penicillin should be given hypodermatically every three hours until danger of infection has passed, and some form of sulfa powder or crystals should be placed in the wound. Those patients who have been immunized with tetanus toxoid should have a booster dose, especially if it has been more than six months since the immunization. Patients who have not had the tetanus toxoid should be given tetanus antitoxin after making proper skin tests to see if they are allergic to antitoxin.

### REDUCTION

After the wound has been thoroughly cleansed, and roentgenograms have been made, the physician is ready to attempt reduction of the fracture. Due care should be taken not to injure important nerves and blood vessels as serious injury to these parts can be done by sharp, jagged ends of bone. Also, care should be taken to see that no soft tissue gets between the ends of the bones as this will prevent union even though the fragments are in good alignment. Of course, the patient should be thoroughly relaxed by proper anesthesia, the type of anesthetic varying with the individual case. Good function is the main thing sought after. It is important to know that good function can be achieved without perfect anatomic end to end fixation so long as the general weight bearing line is good.

The method of treating the fracture varies with the individual physician. Some surgeons prefer open reduction in practically all cases whereas other surgeons prefer closed

reduction in practically all cases. My opinion is that in the great majority of cases the general practitioner should choose the closed method. Far less traction is needed in achieving reduction if angulation and manipulation are used with proper relaxation of the muscles and tendons under good anesthesia.

After the fracture has been reduced, due care should be exercised in application of the cast. Not all fractures have to be set, for example, fractures of the skull, linear fractures of long bones, and rib fractures, but it is essential that any fracture requiring reduction should be accurately set before any form of fixation is applied. It is frequently more difficult to maintain good position than it is to reduce the fracture. Displacement is brought about by contraction and spasm of the muscles. Every movement in a recent fracture (unless there is injury to the nerve supply) causes pain and produces reflex muscle spasm. When the spasm of muscles has been abolished, their tension must be counteracted, which can be done if the joints are placed in a position midway between flexion and extension.

### FIXATION

Before applying a plaster of paris cast, pressure points such as the heel, condyles, and tuberosities must be protected by the use of cotton batting, felt, and stockinet. The average doctor is more likely to place too little padding over pressure points rather than too much. However, it is just as bad technique to overpad a part and then place a loose plaster of paris cast around it as it is to neglect the padding and produce pressure sores as a result. If too much padding is used, it soon becomes compressed, the fractured bones move around in the plaster, and fixation is inadequate; not only this, but a loosely fitting cast is less comfortable and may even result in pressure sores because of the movement of the limb. A plaster of paris bandage should be applied smoothly with even tension. It should be tight enough so that it sets snugly to the patient, and care should be taken that when it is tightened there is even pressure across the full width of the plaster bandage to avoid cutting in at some point and causing a pressure sore. It is important that the patient's limb be maintained in good position until the plaster sets; movement may cause breaking of the plaster cast or a wrinkle in its surface which will result in a pressure sore later. Also in applying plaster casts it is necessary to avoid keeping the hands in one place and making indentations in the plaster as these indentations tend to remain and make pressure sores and sloughing after the plaster is set. The cast should be thick enough that it will not break easily, yet not too heavy. Proper allowance should be given to possible swelling after the application of the cast. If the cast becomes too tight it must be loosened, and frequently after swelling has subsided, the cast may become too loose and a new cast must be supplied. Serious damage has been known to occur from putting a cast on too tight and leaving it too long. For example, I know about a young lady upon whose arm a cast was applied. Swelling set in, causing the cast to become too tight. The cast was left on too long and Volkmann's contracture developed, resulting in a hand and forearm which will be crippled for the rest of her life.

Constant improvements are being made in material used for the cast. Water is a weakening factor in a drying cast. Casts with minimum water content dry faster, and tests show they are stronger and more dependable during the drying period. In this modern age of plastic material almost anything can happen. Already there is a new material, fiber glass, used in making casts which are stronger yet much lighter than plaster of paris casts. The fiber glass is light and cool, and is six times lighter than plaster. This knit plaster cast is porous, admits light and air, is not affected by water, allows freedom, and provides a greater comfort and protection for the patient. Waterproof stockinet and thin waterproof felt also are now available.

Several times during the year, various salesmen representing the splint manufacturers call upon the general practitioner with new gadgets for certain fractures. Some of these are good and some are bad. The general practitioner will do well to stick to the more simple splints and appliances.

Any kind of splinting or fixation is only temporary and must be removed when the bones are capable of functioning, that is, the bony union is firm.

The physician in the smallest town may be suddenly called to the aid of a patient suffering a severe fracture. He should know how to transfer the patient to a hospital with the least possible additional injury should hospitalization be necessary. It is not my belief that the time will come in general practice when all fracture cases will be treated by specialists, but it is my opinion that every general practitioner should be able to recognize the possible occurrence of complications and deformities in certain fractures. In order to safeguard himself and to give his patient the best possible care, he should procure the opinion and the aid of a specialist when necessary. Fractures of the skull and face are more apt to require a specialist.

The bones most frequently fractured are (1) phalanges, (2) metacarpals, (3) clavicle, (4) radius, (5) humerus, (6) fibula, (7) tibia, all of which can usually be successfully treated by the general practitioner, and in addition to these, (8) fractures of ribs, (9) green stick fractures of long bones, and (10) fractures of the pelvis in which no serious damage has been done to the internal viscera.

Fractures are more common in the male and in those from 10 to 50 years of age, for during this period of life a person is more active and exposed to injury. Also, old age is a predisposing cause of fractures as the structure of various bones changes with age. In senility there are many persons with rather marked osteoporosis which affects especially the upper end of the femur and humerus and lower end of the radius, making these bones more susceptible to fracture by relatively slight violence. It should always be borne in mind in treating fractures of the aged that old people are more apt to develop pneumonia from staying in bed too much. Therefore, while confined to bed, they should be turned as often as consistent with good treatment of the fracture and should be encouraged to get out of bed as soon as feasible.

Most of the cases of epiphyseal separation occur between the ages of 6 and 12 at a time when the epiphyses are rather large and the cartilage is relatively soft, this being the period of active growth. The differential diagnosis between epiphyseal separation and fracture cases in many instances can be made only by the roentgen-ray. In the treatment of epiphyseal separation it is advisable that anatomic reduction be obtained when possible, otherwise deformity may occur as a result of abnormal growth at the site of separation. It is important that the general practitioner warn the parents that occasionally after epiphyseal separation a disturbance of growth in the bone may result in shortening or even abnormal lengthening in rare instances. When these growth disturbances occur they are serious and demand operative interference. Therefore, the general practitioner should always let the parents know that such deformities do occur and that they may occur despite proper treatment.

A slight deformity in a joint fracture may result in disproportionate disability. Loss of function varies in different fractures and in different persons with the same kind of fracture. In incomplete or impacted fracture the loss of function may be relatively slight. Sometimes a patient can and will walk on an impacted fracture of the upper end of the femur or with a fracture of the shaft of the fibula and thus be misled in believing that he does not have a fracture. There is a common belief among the laity that it is impossible to walk on a fractured bone. Some people believe that there is no fracture if they can even move the limb.

The fear of stiffness of the joints often causes the fixation splinting to be removed too soon. The period allowed for bony union is much too short. Three to four weeks is commonly accepted for the forearm. However, according to Böhler, transverse fractures through the middle of the radius are rarely firm in less than eight weeks and frequently require much longer time. Transverse fractures of the tibia in the middle third are never firm in six weeks but require ten weeks or more. The results to be guarded against in any fracture are shortening, bending, distortion, stiffness of the joints, atrophy of the muscles, and chronic swelling. Shortening, angulation, and deformity can be prevented if the fragments are properly replaced and held in position until firm union has occurred. Stiffness is most effectively prevented, particularly in fractures near the joints, by accurate replacement of the fragments and by avoiding too early movements which may disturb this position. Passive movements and massage begun too early are particularly harmful in these cases because it is possible to carry them out only if the fixation is removed and immobilization interrupted. The fear that long continued immobilization of a portion of the limb will lead to muscle wasting is unfounded because the muscles are apt to work and contract strongly without movements of the joint surfaces. Risak pointed out that articular cartilages do not suffer by immobilization lasting several months. Pulmonary embolism may be brought about by massage of the recent injuries. The use of massage and passive movements in all conditions of recent injury or inflammation are harmful.

The limb is generally not capable of its full use when the bony fragments have just united in good position. Young patients may return to work in a few weeks. It is necessary to allow older persons, especially those with a fracture of femur or tibia, from two to six months longer before hard work can be undertaken. In spite of good position of the fragments, in spite of exercise of the limb during the period of immobilization, the muscles have become weak and the lower leg swollen. If physiotherapy is carried out in the right manner and begins only when the bones have properly united, no damage can be done, and the injured man, particularly when he is insured, has a feeling that some-

thing is being done for him. Massage and passive movements employed too early interfere with the rest necessary for healing and cause pain.

In all recent injuries, general health is affected by pain. The effects are not only in the physical being but in the morale. The limb is not used because it is painful; therefore bone and muscle wasting occur quickly. When a proper splint or cast or traction is applied, the pain disappears, the limb can be moved, the patient himself is no longer ill, and for this reason muscle and bone wasting does not occur to any noticeable extent. If it is already present, it disappears to a large extent. Full recovery also depends on age. Naturally the young patients and athletes will recover sooner than older people, especially persons with a tendency to varicose veins and short, heavy set persons. It is frequently amazing how quickly all traces of disability will melt away like snow in the hot sunshine in compensation cases after the patient has received final payment from the insurance company.

SUMMARY

Angulation and manipulation rather than brute force should be used in reduction of fractures. Osteoporosis is a factor in etiology of fractures and delay in restoration of function. A method of treating compound fractures is described. The technique of applying a cast or fixation splint is given in detail. The roentgenogram is a valuable aid in obtaining proper reduction of fractures and of keeping the fragments in good position until bony union has occurred, thus insuring good function.

REFERENCES

1. Böhler, L. (English translation by Steinberg, M. E.): Treatment of Fractures, Vienna, Wilhelm Mandrich, 1929.
2. Key, J. A., and Conwell, H. E.: Fractures, Dislocations, and Sprains, ed. 3, St. Louis, C. V. Mosby Co., 1942.
3. Speed, K.: Text-Book of Fractures and Dislocations, Covering Their Pathology, Diagnosis, and Treatment, ed. 2, Philadelphia, Lea and Febiger, 1928.

San Jacinto Building.

ABSTRACT OF DISCUSSION

**Dr. W. E. Whigham,** McAllen: I agree with Dr. Powell that the majority of simple fractures can and should be handled by the family doctor or the general practitioner. In this age of high speed automobiles, good roads, and good liquor, physicians are seeing many more serious, multiple, and compound fractures in which the general practitioner would do well to call in a consultant or refer the patient to a specialist.

All patients with fractures deserve a thorough examination. There may be serious injury to soft tissues causing shock, or other fractures, not so painful but of a more serious nature, which are easily overlooked.

Roentgenograms are of a great deal of value in determining the type and extent of fractures. I am glad the essayist suggested at least three roentgenograms or series of roentgenograms if possible: one, perhaps while first aid is being rendered, a second after reduction and immobilization, and a third when the patient is dismissed.

This is well illustrated by synopsis of a recent case. A 50 year old man was seriously injured in an automobile accident. He had numerous bruises about the head, neck, and chest. Preliminary roentgenograms showed several fractured ribs which together with the soft tissue injuries caused severe pain, shock, and so forth. Roentgenograms of the skull and neck were negative. About a month later roentgenograms showed a fracture at the base of the skull, which was not found at first because of the swelling and contusion. About three months after the accident roentgenograms for an indefinite pain in the neck revealed an aseptic necrosis of the body of the fifth cervical vertebra or Kümmell's disease. The fitting of a neck splint has relieved all his symptoms.

In general I believe with Dr. Powell that the general practitioner should use the closed method of reduction. However, there are some apparently simple fractures which should always be treated by the open method, as for instance the olecranon and patella.

I too use local anesthesia almost exclusively in reducing fractures of the extremities, perhaps preceded by a dose of morphine. Fractures of the femur in an unusually muscular person are usually easier reduced under spinal anesthesia.

Dr. Powell makes a good point in suggesting that after reduction the adjacent joints should be partly flexed and immobilized. I agree that the more simple appliances and splints, especially plaster splints, are best for immobilization. I rarely use a plaster cast except for a fracture of the femur and the humerus (hanging cast).

It has been my practice in fractures of the extremities to remove the splints and begin passive motion fairly early, perhaps within from ten to twenty days and repeated once or twice a week although no definite rule can be given for this procedure. I have subscribed to the belief that this prevented much fibrocytis and muscle wasting and thus restored normal function earlier.

**Dr. Lowell S. Goin,** Los Angeles: Let me urge that the fluoroscope not be used in the diagnosis or reduction of fractures. Many fractures cannot be recognized by fluoroscopic examination even in the most skilled hands and it is an instrument of great danger. If the physician must use it, he should be sure that a qualified physicist makes measurements at frequent intervals so that the amount of radiation received on the patient's skin and on the physician's hands will be known. Also it is well to have an integrating clock which will turn off the roentgen ray after the lapse of a certain amount of exposure.

## FEVER THERAPY IN SYPHILIS

Artificially produced fever increases the effectiveness of the seven and a half day penicillin treatment for syphilis to more than 80 per cent, a substantial improvement over both penicillin alone and penicillin and mapharsen in combination for the same period of time. This valuable use of fever therapy is described by Herman N. Bundesen, M. D., president of the Chicago Board of Health, and a group of four doctors who assisted him, in an article in the July 31 issue of *The Journal of the American Medical Association.*

In comparison with the 80 per cent effectiveness of penicillin and fever therapy in seven and one-half days their tests show penicillin 70 per cent effective and penicillin given with mapharsen 49 per cent effective against syphilis in seven and one-half days. Fever therapy, however, does not cut down on the time required for penicillin treatment, the doctors found.

# DIAGNOSIS AND TREATMENT OF PROTRUDED LUMBAR INTERVERTEBRAL DISKS

CLAUDE D. WILSON, M. D.
WICHITA FALLS, TEXAS

Since the first published report of a case operated on for protrusion of the intervertebral disk into the neutral canal by Oppenheim and Krause[8] in 1909, this subject has been the source of extensive writing and no little controversy among neurosurgeons, orthopedic surgeons, and radiologists. The earlier reports all had to do with cases showing more or less complete transverse spinal cord damage, and the removed disks were called enchondromas. Schmorl, in his extensive research on the spine published in 1928, recognized protrusions of the intervertebral disks as of common occurrence, but did not consider them to be of neurologic or clinical significance. In recent years, protrusion of intervertebral disks has become recognized as a definite clinical entity; in fact, many orthopedic and neurosurgeons now believe that the diagnosis can be made from the history and physical findings alone or even by a telephone conversation with the patient.

However, despite the granted existence of this syndrome and the apparent ease of diagnosis, protruded intervertebral disks are still real and serious problems with no complete solution available to date. The diagnosis of this condition offers only slight difficulty, but the treatment is not yet mastered. It is here that radiologists can play an important role—not in the actual treatment, but in definitely proving for the surgeon the presence of a protruded disk, the extent of the lesion, and whether the protrusion is single or multiple, unilateral or bilateral.

Since so-called idiopathic low-back pain is perhaps the most commonly encountered complaint in an adult orthopedic clinic, and since the exact pathologic changes which are responsible for the symptom have for the most part been unknown in the past, the protrusion of an intervertebral disk offered a plausible and a satisfactory explanation, and has been eagerly embraced as the answer to the problem of low-back pain. There is, indeed, much evidence to support this contention. There is increasing evidence to indicate that in the overwhelming majority of patients presenting an idiopathic low-back pain, the cause of the pain is within the neutral canal, and according to Key,[4] 90 per cent of these cases have a lesion of the intervertebral disk. Here, at least, is a definite pathologic entity which offers a possible explanation for the conditions previously loosely classified as low-back strains, sacroiliac strains, and postural back pain. There are, of course, those who do not agree that the percentage of protruded disks is that high, but all are agreed that the condition is real, frequently encountered, and as a factor in backache its importance cannot be overstressed.

From the Wichita Falls Clinic-Hospital.
Read before the Section on Radiology and Physiotherapy, State Medical Association of Texas Annual Session, Houston, April 27, 1948.

## PATHOLOGY AND ANATOMY

Therefore, a working knowledge of the anatomy and pathology of the intervertebral disk is especially important. The intervertebral disk is not a passive, vestigial remnant. Although, it is undoubtedly true that the primitive notochord is the anlage of the disks, the disks are an active, living structure, constantly functioning. The disks serve first as articulations between the vertebrae. Without the intervertebral disks, the spine would be a rigid structure and could not bend to meet the delicate needs required by the body. In addition to the function of connecting and articulating the adjacent vertebrae, the disk serves as a shock-absorber or cushion to transmit, modify, and distribute evenly the forces of strain. As stated by Beadle, the disk "is a unit whose function is to control the continual and infinitely various cross currents of tension, pressure, and mechanical shock, which interplay with one another as injurious agencies during every moment of life."

The normal spinal column contains twenty-three intervertebral disks which make up roughly one-fourth of the height of the vertebral column. The disks are thinnest in the thoracic region and thickest in the lumbar region. The disk, lying like a cushion between the two adjacent vertebral bodies, is composed of three distinct parts:[3]

1. Cartilaginous plate. The hyaline cartilage plate covers the bone of the vertebra and acts as a limiting plate caudad and cephalad.

2. Annulus fibrosus. This arises from the cartilaginous plates, surrounds the nucleus pulposus, and inserts into the anterior and posterior longitudinal ligaments and into the bone of the vertebrae. It gives size and shape to the disk and is the seat of most of its strength and tenacity.

3. Nucleus pulposus. This is the semigelatinous center of the disk which is encapsulated by the annulus. When the annulus is cut, the nucleus swells out as a white glistening body, indicating that the nucleus is normally under tension.

In the development of the spinal canal, the

vertebrae, cartilaginous plates, and annulus fibrosus are derived from mesoderm. The nucleus pulposus is derived from endoderm, a remnant of the notochord. Neither the primitive vertebrae nor the provertebrae corform the adult vertebra and the notochord becomes extruded into the intervertebral regions as its canal gradually closes.

Thus, the intervertebral disk can be compared to a thick, rubber ball, filled with

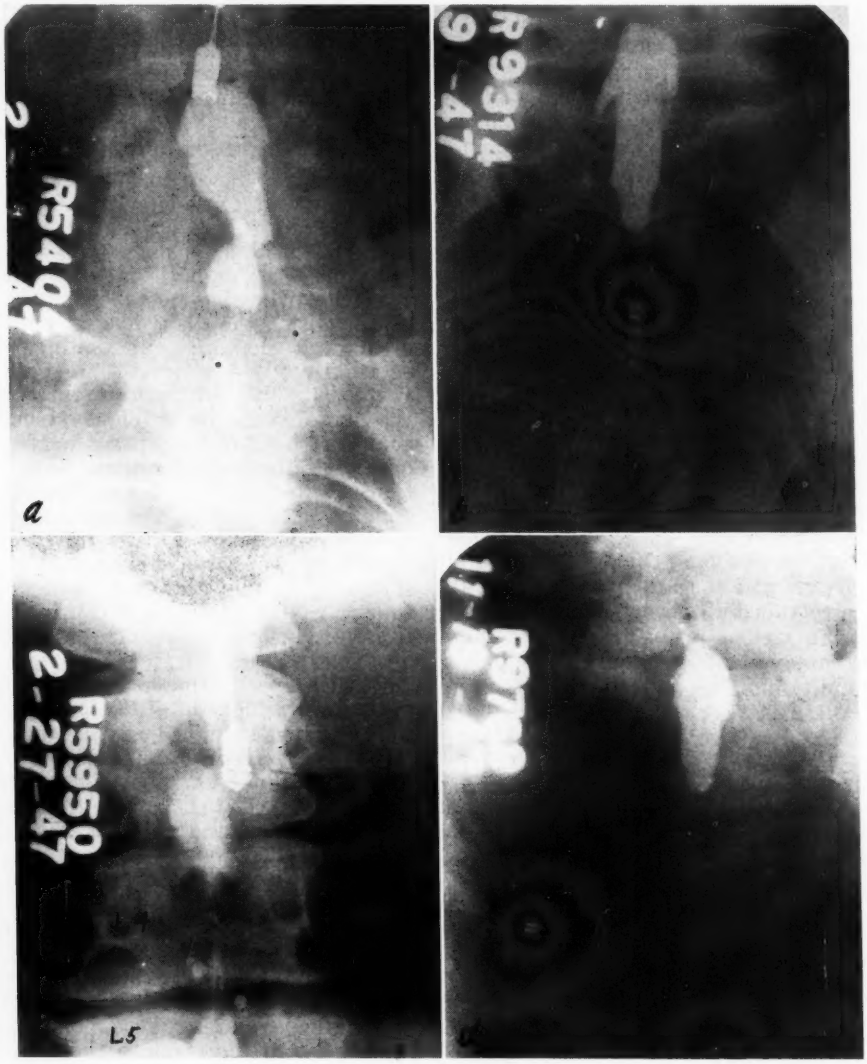



FIG. 1a. Myelogram showing a large lateral pressure defect at the lumbosacral joint. The protruded disk has been removed.

b. Myelogram showing a nerve root defect. Note the normal filling of the right nerve root sheath at the fifth lumbar vertebra but the deformity and compression of the corresponding nerve root sheath on the left.

c. Myelogram showing a gap defect. There is midline protrusion of the disk with pooling of pantopaque above and below the protrusion.

d. Myelogram showing a block defect at the lumbosacral joint. Oil seeped by from above but would not flow by the defect from below.

respond to the adult vertebrae, for each provertebra divides horizontally and the caudal half attaches to the cephalad half of the adjacent provertebra. These halves unite to fluid, and partially compressed between two rigid disks. When the position of the disks and the distribution of the force on them change, the position and shape of the com-

pressed ball changes accordingly. If the ball is punctured, the fluid escapes, the tension is lost, and the two disks are allowed to come closer together. Flexion of the spinal column causes an anterior compression of the nucleus, producing a posterior displacement or retropulsion of the nucleus, and since the fibers of the annulus are weakest posteriorly and laterally, most of the protrusions of disks occur posteriorly and laterally. Further, the protrusions occur most commonly laterally, because, although the posterior longitudinal ligament is weaker than the corresponding anterior ligament, the weakest portion of the disk is the lateral margins.

It naturally follows that the most frequent sites for protrusions to occur are in the portions of the spine where the disks receive more strain and shock. This, of course, is in the lumbar and cervical regions. The lumbar disks, undoubtedly, receive more traumatic strain and tension than any other — particularly the fourth and fifth lumbar disks, which are the most used and the most abused. In disk derangement, physicians are dealing with a dual problem: (1) deranged spinal mechanics and (2) nerve root irritation and compression.

## ROENTGEN DIAGNOSIS OF PROTRUDED DISKS

Despite the modern trend toward diagnosing protruded disks by history and physical examination alone, the careful surgeon will also seek valuable aid from radiologists. Granted that ruptured intervertebral disk is the most common cause of intractable low-back pain and sciatic pain, it is not the only cause.

*Routine Radiography of Lumbar Spine.*—Every patient in whom a protruded disk is suspected clinically should have a routine radiographic examination of that portion of the spine. The information gleaned may possibly be more of a negative than a positive nature, since there are no definitely pathognomonic findings. The most frequent encountered findings are: (1) List of the spine to the right or to the left, more commonly away from the protruded disk in order to relieve the pressure on the compressed nerve. (2) Loss of the normal lordotic curve, apparently the result of muscle spasm. (3) Narrowing of the intervertebral space. A normal intervertebral space does not exclude the presence of protrusion nor does a slight reduction definitely prove that the nucleus has protruded. The disk may be damaged by repeated trauma before actual rupture, and the nucleus shows a considerable variation in the thickness as water is absorbed or lost. Indeed, the disk shows degenerative changes earlier than any other tissue of the body. However, most patients with a long history of disk symptoms show a bony proliferation and a narrowing of the cartilage space.[1] (4) Anomalies. The lumbosacral region of the spine is the most frequent site of anomalies, such as spina bifida occulta, lumbarization, and sacralization. These anomalies, per se, are of no clinical significance, but the knowledge of their presence is comforting and important to the surgeon as he counts the posterior spinous processes to determine just which spaces to explore. (5) Spondylolisthesis. This condition is frequently accompanied by a protruded disk, and simple removal of the disk will usually not relieve the symptoms. (6) Marie-Strumpel arthritis, tuberculosis of the spine, metastatic and primary neoplasms of the spine should be excluded by routine films.

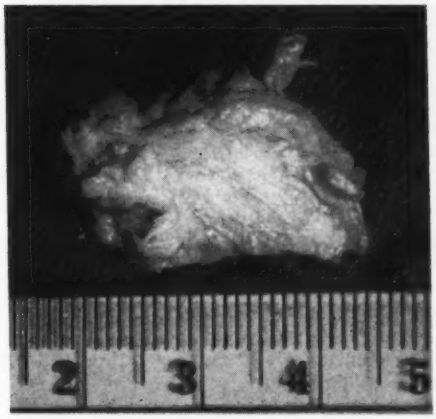



FIG. 2. Photograph showing the large disk removed in the case shown in figure 1d. The disk was practically loose and was removed intact. The specimen is the nucleus pulposus and is shown measured by a centimeter scale.

*Myelography.*—Study of the neural canal by means of opaque oil or by air has been used for more than twenty-five years, but the popularity of this study has waned in recent years, until the introduction of pantopaque by Garvey and Jones[9] of Strong Memorial Hospital, Rochester, N. Y., in 1940 and 1941. The introduction of lipiodol into the neural canal was being discouraged because it was practically nonabsorbable and not infrequently became fixed in the cranium or in the neural canal, producing adhesions and persistent headache or nerve pain. On the other hand, air myelography was unsatisfactory because of the poor contrast and the failure to demonstrate small lesions.

Pantopaque, a mixture of the ethyl esters of isomeric iodophenylundecylic acids, however, has proved to be a significant advance in contrast myelography. This is an oily

type of fluid, containing 30.5 per cent of iodine (as compared with 40 per cent of iodine in lipiodol) with a specific gravity of 1.263 at 20 C., and is about one-seventeenth as viscous as lipiodol at 37.5 C. Being of low viscosity, it can be injected and withdrawn with ease so that epidural injection is less likely since no force is required to inject it. Pantopaque moves up and down the neural canal with ease and enters nerve sheaths readily, thereby outlining small defects more accurately. No irritant or toxic manifestations have been observed in man where the pantopaque has been left in the neural canal. Absorption occurs at a variable rate, but usually at the rate of about 0.5 cc. per year.

The pantopaque is introduced into the spinal canal by the usual lumbar puncture method, with the patient lying prone, taking care not to insert the needle at the site of the suspected disk. The amount usually recommended is 3 cc., but I am convinced that the accuracy of the examination is increased by using 5 or 6 cc. Since the oil column is larger, smaller lesions can be identified, nerve sheath filling is better, and the oil can as easily be removed when the examination is completed.

The oil is watched fluoroscopically as it is allowed to flow slowly from the caudal sac to the highest level under study. Any lag, delay, deviation, or filling defect in the oil column is carefully noted, filmed by means of a spot film device, and reproduced several times by repeatedly passing the oil back and forth over this point.

### TYPES OF DEFECTS

1. *Lateral pressure defects,* as indicated, are produced by a lateral herniation and are the most frequent type encountered. The usual appearance is a fairly smooth, well demarcated rounded notch on one side of the oil column. The size of the defect varies, but there is usually an accompanying obliteration or distortion of the nerve root sheath at the same level. It should be noted that the size of the defect in the oil column is not always an index to the size of the protrusion. A large defect usually indicates an extensive protrusion with possibly a complete avulsion of the nucleus, which may lie free in the canal. However, a small defect in the lumbosacral level does not necessarily indicate a slight protrusion, for the canal may be narrow and the defect may lie under the nerve root in its extradural course. (Fig. 1a.)

2. *Nerve root defect.* A lateral protrusion of the disk may compress the nerve root sheath without producing a visible defect in the oil in the subarachnoid space. In such instances, the nerve sheath filling may be absent, elevated, depressed, or distorted. This is one of the most reliable of the myelographic findings and when observed indicates definite nerve root pressure. (Fig. 1b.)

3. *Hour-glass defects* are usually due to a bilateral protrusion. However, false defects of the hour-glass type are not uncommon, as a result of a slight bulging of the disk or of hypertrophic osteophytes. Such false defects are, however, likely to be multiple. (Fig. 1c.)

4. *Gap defects* are produced by a midline protrusion in which the oil pools above and below the lesion, but is not completely obstructed. The oil drops slowly over the protruded disk, usually lateral to the midline.

5. *Block defect* is a rare finding in which the flow of oil is completely blocked by a large midline protrusion. Clinically and roentgenoscopically such lesions are difficult to differentiate from spinal cord tumors. (Fig. 1d and 2.)

6. *Veil defect* is also due to a midline protrusion in which the oil column is thinned as it passes over the defect. Such defects are not common and are difficult to demonstrate.

A careful myelographic study should be done on every patient in which surgical removal of a protruded disk is anticipated, no matter how typical the clinical picture. Such an examination is now simple and without significant sequelae, and is of valuable aid to the surgeon in definitely proving the presence of a protruded disk, the precise location of the disk, the size and extent of the protrusion, and whether the protrusion is single or multiple, and in excluding a spinal cord tumor. A carefully conducted myelographic examination should reveal up to 90 per cent of the protrusions which are clinically apparent. The protrusions most likely to be missed are those at the fourth and fifth lumbar vertebrae where the dural sac is narrow, and the protruded disk produces no pressure on the oil column or on the nerve sheath. A negative myelogram is of value, for if no defect is found by myelography, but clinically the diagnosis is compatible, the lesion, if present, will almost always be found at the lumbosacral level.

Occasionally a definite defect is found in the oil column, but no abnormalities are seen at surgery. Such "false positive" defects may be produced by (1) epidural injection of oil, (2) large epidural varices, (3) hypertrophic spurs on the vertebrae, and (4) needle defect due to tension on the dura. If the latter is suspected, the needle should be removed and the space thoroughly reexamined.

### TREATMENT

In recent years, the trend has been toward surgical removal of most ruptured inter-

vertebral disks. The end results, however, have been poor, and the salvage rate has been low. Now, however, surgeons are in fairly general agreement that operative removal should be reserved for those patients who have intractable pain in spite of prolonged, adequate, conservative treatment, and for those who show evidence of moderate to severe nerve root compression as indicated by muscle weakness, paralysis, anesthesia, or sphincter disturbance. The conservative measures include bed rest, plaster jackets or other forms of immobilization, and sometimes traction. After a well planned and well executed course of conservative treatment, if the condition of the patient becomes worse, if he is unable to carry on his usual activities or if muscle atrophy or neurologic signs develop, and if the myelogram shows a ruptured disk, surgical procedures are in order.

In the treatment of ruptured disks, the point of greatest variance of opinion is whether or not spinal fusion should be done after the disk is removed. Opinions on this point run the gamut from those who advocate fusing all of these cases to those who advocate fusing none. Obviously, somewhere between these two extremes lies the ideal.

## CONCLUSIONS

1. Protrusion of the lumbar intervertebral disks is the most common cause of prolonged low-back pain. The pain is due to deranged spinal mechanics and to nerve root compression.

2. Every patient presenting clinical evidence of a protruded lumbar disk should have a radiographic examination of the lumbar spine, and if surgery is contemplated, a myelographic examination should be done.

3. Careful myelographic examination should demonstrate about 90 per cent of the protruded disks which are clinically apparent.

4. Proper diagnosis and treatment of protruded intervertebral disks require careful clinical and roentgenographic evaluation.

## REFERENCES

1. Arbuckle, R. K.; Sheldon, H. C.; and Pudenz, R. H.: Pantopaque Myelography: Correlation of Roentgenologic and Neurologic Findings, Radiology 45:356-369 (Oct.) 1945.

2. Barr, J. S.: Ruptured Intervertebral Disc and Sciatic Pain, J. Bone & Joint Surg. 29:429-437 (April) 1947.

3. Coventry, M. B.; Ghormley, R. K.; and Kernohan, J. W.: Intervertebral Disc: Its Microscopic Anatomy and Pathology, J. Bone & Joint Surg. 27:105-112 (Jan.) 1945.

4. Key, J. A.: Intervertebral Disk Lesions Are Most Common Cause of Low Back Pain with or without Sciatica, Ann. Surg. 121:534-539 (April) 1945.

5. Love, J. G., and Walsh, M. N.: Protruded Intervertebral Disks, Surg. Gynec., & Obst. 77:497-509 (Nov.) 1943.

6. Magnuson, P. B.: Intervertebral Disks, Am. Surg. 67: 84-92 (Feb.) 1945.

7. Mixter, W. J., and Barr, J.: Protrusion of Lower Lumbar Intervertebral Disks, New England J. Med. 223:523-529 (Oct.) 1940.

8. Oppenheim, M., and Krause, F.: Ueber Einklemmung Bzw. Strangulation der Cauda Equina, Deutsche Med. Wchnschr. 35:697-700, 1909.

9. Steinhausen, T. B., and others: Iodinated Organic Compounds as Contrast Media for Radiographic Diagnosis, III. Experimental and Clinical Myelography with Ethyl Iodophenylundecylate (Pantopaque), Radiology 43:230-234 (Sept.) 1944.

10. Symposium on Intervertebral Disc, J. Bone & Joint Surg., April, 1947.

# CONGENITAL EVISCERATION WITH ATRESIA OF THE COLON

ROBERT G. LEMON, M. D.,
and
JAMES N. WALKER, M. D.
FORT WORTH, TEXAS

Congenital evisceration, while not common, has been described repeatedly in the literature. Congenital atresia of the bowel is one of the less common serious abnormalities of development. However, inasmuch as this case represents an interesting combination of the two plus nonrotation of the bowel, it was thought that a report would be of considerable interest.

The terminology of congenital abdominal defects and intestinal obstructions in the literature is somewhat confusing. The term evisceration has been used to denote the stomach and a large portion of the bowel protruding free without covering through a large defect in the abdominal wall. Congenital umbilical hernia, omphalocele, exomphalus, amniocele, and other terms are frequently used to describe congenital herniation of abdominal viscera. These terms, however, suggest a covering of peritoneum and skin or amniotic tissue. The herniated bowel in this patient had no covering of any kind and was lying free on the abdominal wall.

Atresia of the intestine signifies complete obstruction of the bowel due to absence of a lumen or the presence of an obstructing septum or diaphragm within the bowel. In this patient, atresia of the colon was found extending from the ileocecal valve to the splenic flexure. Rotation of the intestine had not occurred and the bowel configuration resembled the early embryologic pattern with the ascending and transverse colon to the left of the small intestine (fig. 1).

## CASE REPORT

J. C. S., a white male premature infant (later found to weigh 4 pounds, 3 ounces) of Italian descent was born July 27, 1947, by low forceps delivery. Upon delivering the abdomen, it was noted by the obstetrician that the intestinal tract was herniated through the umbilicus. The cord was severed and the infant wrapped in a warm sheet. A brief examination revealed evisceration of the stomach and all of the bowel, but no other obvious deformities were noted. The infant showed signs of respiratory attempts in the form of occasional gasps although there was no cry. The pharynx was aspirated and considerable material resembling meconium was obtained. Feeble respirations started after aspiration, oxygen inhalations, warm blankets, intramuscular coramine, and artificial respiration. A

Read before the Section on Pediatrics, State Medical Association of Texas, Annual Session, Houston, April 28, 1948.

sterile sheet was moistened with warm saline solution and the protruding viscera wrapped therein.

The baby was taken to the operating room and surgery begun about an hour after birth. He had not responded sufficiently to cry and became rapidly cyanotic whenever oxygen was momentarily stopped. No anesthesia of any sort was used. Continuous oxygen was maintained per nasal funnel and a plasma infusion (30 cc.) was given by scalp vein during the operation.

The eviscerated stomach, intestine, and mesentery were adherent to the margin of the abdominal defect and were easily separated by blunt dissection. Apparently there had been considerable prolonged constriction of the intestine and its blood supply at the abdominal aperture because the bowel was markedly edematous, thickened, and congested. The small intestine was greatly distended. The defect in the abdomen was enlarged superiorly and inferiorly for a short distance to allow exploration of the large intestine. Proceeding distally from the terminal ileum the colon became a narrow cord-like structure, 4 to 5 mm. in diameter, and closely fused to the mesentery of the small intestine. Beyond the splenic flexure a gradual widening of the colon was noted and the presence of a lumen was ascertained.

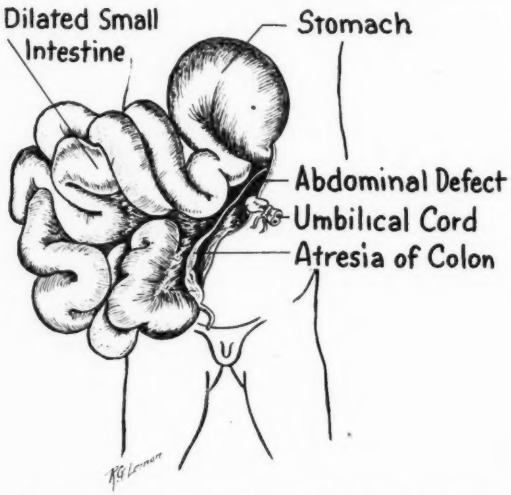



FIG. 1. Drawing showing evisceration of the stomach and colon through a congenital defect in the abdominal wall. Atresia of the colon is seen extending from the ileocecal valve to the splenic flexure. Note the absence of membranous sac covering the herniated viscera.

It was decided to do a one stage short circuiting operation around the area of atresia. Suitable sites were chosen on the terminal ileum and as high as possible on the descending colon to perform an ileocolostomy. Considerable disproportion existed between the dilated ileum and the contracted descending colon, but the colon was obviously patent at this point. In order to facilitate the anastomosis, the terminal ileum was partially decompressed by syringe aspiration through a large caliber needle inserted into the lumen of the ileum. A side to side ileo-colostomy was then performed without clamps, using an outer row of interrupted fine silk sutures and an inner row of continuous fine catgut sutures creating a stoma about 3.5 cm. long (fig. 2). At several times during the procedure the infant became cyanotic and respirations almost ceased, but immediate aspiration reestablished normal breathing. This difficulty probably resulted from obstruction due to regurgitation of gastric contents.

After completing the anastomosis it was necessary to replace a large mass of chronically thickened edematous and dilated stomach and intestine into a small contracted abdominal cavity, which apparently had never previously contained these organs. To facilitate this process a small catheter was passed into the stomach and duodenum from above and their contents aspirated. Some difficulty was experienced due to the thick, mucoid, tenacious nature of their contents. After several unsuccessful attempts to replace the bowel, the idea of manually stretching or dilating the abdominal muscles presented itself, much like the rectal sphincter muscle might be dilated to obtain relaxation. This was then gently performed on either side of the abdominal wall and produced a surprising amount of additional space in the abdominal cavity. The intestines were replaced and the wound edges approximated but not without difficulty. The wound was closed in a single layer with through and through interrupted No. 20 cotton mattress type sutures, attempting to catch the edge of the rectus sheath on either side with each bite, but being content with simple skin and peritoneal closure where this seemed impossible.

Postoperatively, the infant was placed in an incubator with head lowered and a stomach tube left in situ to facilitate frequent aspiration. Greenish material resembling meconium was obtained for approximately six hours after surgery. Penicillin, 30,000 units every three hours, intramuscularly, was begun in anticipation of peritonitis which never developed. Vitamin K and ascorbic acid was given intramuscularly at intervals during the next twenty-four hours. Continuous oxygen was maintained, with frequent inhalations of carbon dioxide and oxygen. Another infusion of plasma was given six hours after surgery.

The following morning the infant appeared to be in fairly good condition. The stomach tube was removed, but was passed intermittently for aspiration several times during the next twenty-four hours. Five per cent glucose in amounts of 5 cc. by dropper was begun at two hour intervals. This was well

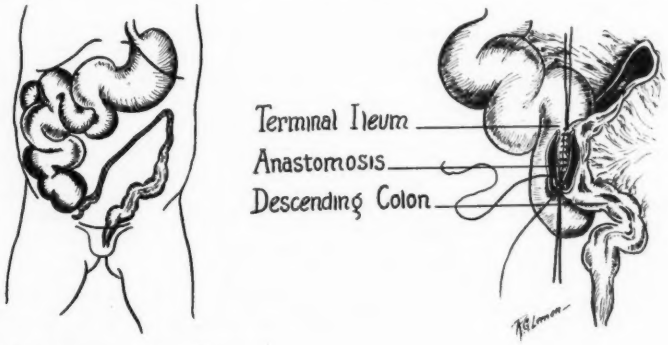



FIG. 2, Left. Drawing showing the configuration of the bowel resembling the early embryologic pattern with the ascending and transverse colon to the left of the small intestine. Right. Drawing showing the method of performing the side to side ileocolostomy. Note the disproportion existing between the dilated ileum and the contracted, though obviously patient, descending colon.

tolerated and was increased later in the day to 10 cc. Normal saline clyses (10 cc. per pound) were given at intervals of eight hours. The following morning the infant still looked in good condition and 15 cc. feedings of diluted skim milk formula were begun. A transfusion of 40 cc. of whole blood was given on this day. On the fourth day the feedings were increased to 20 cc. of boiled skim milk every three hours. The infant was gaining and some edema of the feet was becoming evident, so the clyses were discontinued. On the fifth day feedings of 30 cc. of an Olac formula were started, and this was gradually increased to 60 cc. every three hours at the time of discharge. There being no evidence of peritonitis, penicillin was discontinued on the sixth postoperative day. The edema of the lower extremities gradually subsided. Throughout the hospital stay, stools were formed and were of normal consistency except for a transient diarrhea on the tenth day, following an attempt to increase the caloric in-

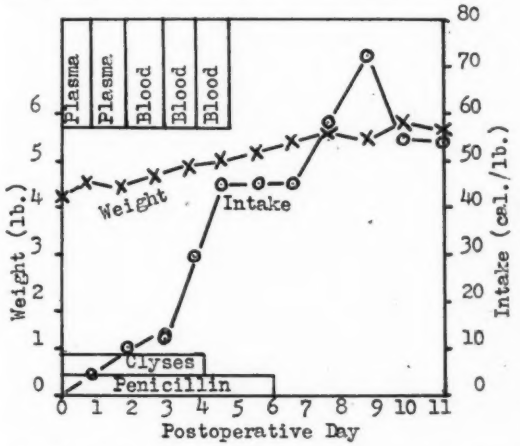



FIG. 3. Chart showing the relationship between weight gain, supportive therapy, and caloric intake during postoperative hospital course. Note the slight weight loss which was associated with a transient diarrhea occurring when an attempt was made to increase the caloric intake too rapidly.

take too rapidly. The wound healed uneventfully and most of the sutures were removed when the patient was discharged on the eleventh hospital day (fig. 3).

Since the infant's discharge from the hospital he has had one bout of otitis media and three or four episodes of diarrhea, all of which have responded to the usual treatment. He was maintained for two months on a low fat, powdered milk formula; then for several months on an acidulated evaporated milk formula plus the usual solid food supplements, cod liver concentrate, and orange juice; and recently has been on whole homogenized milk. There have been no symptoms suggestive of obstruction at any time, although a prolapse of the rectum occurred intermittently during the third and fourth months. The operative wound is well healed except for a deficiency in the abdominal wall of about 4 cm. diameter at the site of the umbilicus, apparently where the fascia had separated. Further operative correction will doubtless be necessary at some time in the future to correct this difficulty. At 9 months of age the infant weighed 16.5 pounds and measured 27.5 inches long (fig. 4).

## DIAGNOSIS

Congenital atresia and stenosis of the intestine, exclusive of the pylorus, rectum, and anal canal, is a relatively rare condition, occurring about once in 20,000 infants. Congenital evisceration occurs once in about 5,000 or 6,000 deliveries, but no estimate could be found in the literature of the incidence of these abnormalities occurring together.

In this instance the diagnosis was obvious because of the evisceration, but in obstructions without evisceration, several hours or even days may pass before the correct diagnosis is made. Early diagnosis is extremely important, as mortality increases rapidly with the passing of time before surgical correction is accomplished.

Vomiting, the most prominent symptom in congenital obstruction of the small bowel, usually begins within the first few days of life and continues irrespective of food taking. Also prominent in the symptomatology are abdominal distention, absence or diminution in the number of stools, and absence of bile

FIG. 4. Photograph of patient at 9 months of age. The wound is well healed except for a deficiency of the fascial layer in the abdominal wall about 4 cm. in diameter at the site of the umbilicus.

in the stools. A rapid loss in weight and dehydration accompany the excessive vomiting.

Roentgen examination of the abdomen is of considerable value in the diagnosis of congenital obstruction of the bowel. Distinct fluid levels may be seen with the patient in the upright position, though less commonly than in obstruction seen in adults.

While gas in the small bowel is a normal finding in infants, marked distention of a portion of the bowel terminating abruptly at the point of obstruction is a significant finding. The use of barium by mouth has been advocated by some, but is not necessary and may cause trouble if allowed to remain in the bowel. There is always the possibility of aspiration following vomiting, and any operative procedure is rendered technically more difficult by barium in the bowel. Pyloric stenosis is hardly apt to be confused with atresia or stenosis beyond the pylorus because of the delayed onset of vomiting in the former, the absence of bile in the vomitus, the absence of marked abdominal distention, and the general condition of the patient.

A laboratory test that has been helpful in the diagnosis of congenital obstruction has been described by Farber. It is based on the fact that meconium begins to collect after the third month of fetal life, and atresia, if present, occurs before that time. He stated that as keratinized epithelial cells are the most constant element found in meconium, the absence of these cells is positive evidence of incomplete continuity of the gut. The test can be made by making a smear of the stool, drying with ether, staining for one minute with gentian violet, and then decolotizing with acid alcohol.

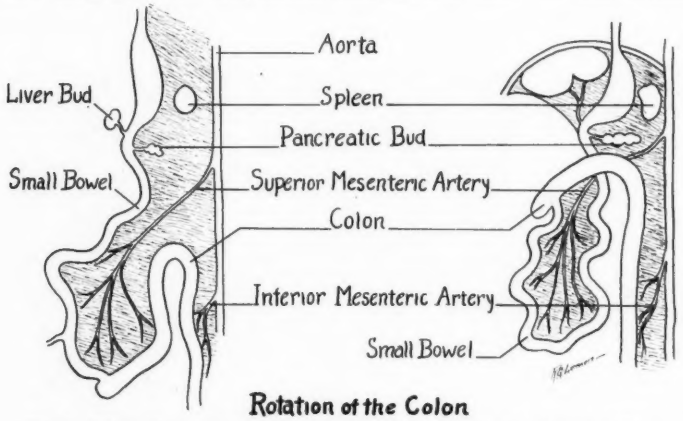



FIG. 5. Schematic representations of the intestinal tract of a human embryo at about the eighth week (left) and at a later stage (right), showing rotation of the bowel beginning in a counter clockwise direction about the axis of the superior mesenteric artery.

## TREATMENT

Treatment of congenital gastro-intestinal atresia consists in early diagnosis and definitive surgery plus adequate supportive therapy in the postoperative period. The danger of gangrene is not so great that time cannot be taken to administer sufficient fluid to restore the normal elements of the blood. Often this can be accomplished by simple hypodermoclysis with normal saline solution. Glucose, plasma, or blood transfusions can be given by scalp vein. Penicillin and/or sulfonamides should be given in large doses in the presence of peritonitis. Postoperative fluid maintenance is essential. Feeding must be done with caution, beginning with saline or glucose solution and gradually increasing the caloric content over several days. A low fat, high protein milk preparation is best tolerated. Ascorbic acid in large doses promotes tissue repair.

## DISCUSSION

Reports in the literature repeatedly emphasize the importance of decompression of the bowel prior to anastomosis and the use of the finest caliber suture possible. It is agreed by all that entero-anastomosis is the treatment of choice and the statement has been made many times that patients never recover following an enterostomy. Ladd, however, reported 1 such case with recovery.

Congenital atresia of the colon is much less common than atresia of the small intestine. Davis and Poynter in 1922 reviewed 401 cases from the literature of which only 39 involved the colon. The commonest types of congenital abdominal defects are the least severe and usually consist of a transparent membranous sac containing a loop of intestine. Occasionally other organs are contained in the sac. Few cases have been reported where no sac was present or where it had ruptured and the intestines lay free on the abdominal wall. Massabuau and Guibal in 1933 collected 22 cases from the literature and added 1 of their own, in which the sac was either absent or only remnants of it remained.

Normally, the intestine develops between the fourth and twelfth weeks of fetal life. Even before the fifth week the intestine presents a well defined lumen with epithelium. The lining cells then rapidly proliferate and soon the lumen is partially or totally obliterated by cellular concrescence. This solid stage is present only a short time until vacuoles appear, which gradually coalesce to form a permanent lumen. The process is usually complete by the twelfth week of fetal life. At the onset of this period of develop-

ment, the digestive tract resembles a straight tube with only a slight dilation representing the stomach. The vitelline duct extends from the bowel ventrally through the umbilical cord to the yolk sac. At about the eighth week the growth of the intestine and other abdominal viscera begins to exceed that of celomic cavity. The disproportion is compensated for by a physiologic herniation of a portion of the intestinal tract near the vitelline duct into the base of the umbilical cord. Soon after this occurs, rotation of the bowel begins in a counter clockwise direction about the axis of the superior mesenteric artery and proceeds through 180 degrees (fig. 5).

Meanwhile the development of the abdominal cavity increases to where it is capable of containing the herniated intestine, which is then gradually withdrawn from the umbilical cord. The pre-arterial segment of the bowel composed of the small intestine proximal to the vitelline duct is withdrawn first and passes behind the mesenteric artery. This is followed by the ascending and transverse colon which crosses from left to right in front of the superior mesenteric artery. Rotation is completed at about the eleventh week and from then until shortly after birth the cecum gradually descends into the right lower abdomen and the duodenum and portions of the colon become fixed to the posterior abdominal wall. Thus, arrest of development at any time between the fourth and twelfth weeks of fetal life may give rise to atresia of the intestine as well as incomplete rotation or nonrotation of the bowel.

The occurrence of omphalocele is not easily explained and several theories have been advanced. The latest of these is that the upper part of the extra-celomic cavity cannot be closed because of a deficiency in connective tissue which is normally derived from the ventral part of the transverse septum and which migrates ventrally and caudally to form the supra-umbilical portion of the abdominal wall. The different portions of the abdominal wall are believed to be formed independently, the supra-umbilical portion being formed about the third week. Thus, the defect must be present several weeks before the physiologic herniation of the intestine occurs and therefore is probably not due to failure of the intestinal loops to return to the abdominal cavity as stated by some observers. Retarded development of the abdominal parietes resulting in disproportion between the abdominal cavity and its contained viscera does not explain the development of omphalocele, unless a supra-umbilical defect was already present. Kermauner's theory that such abdominal defects are due to arrested development of the corresponding myotomes does not account for the fact that the recti muscles and other abdominal muscles are normally developed and merely encircle the defect.

The prognosis of congenital intestinal atresia remains poor but an increasing number of successfully treated cases are appearing in the literature. Death occurs within the first week if the condition is not relieved surgically. Dehydration and rupture of the bowel with peritonitis are the most important causes of the extremely high mortality. Ladd and Gross reported 52 cases of intestinal atresia with only 7 recoveries following surgical treatment. They encountered only 2 cases of atresia of the colon in their series and both of these patients died. In the series of 20 surgically treated omphaloceles of Ladd and Gross there were 10 deaths and 10 survivals.

Ordinarily, the association of more than one congenital anomaly in an infant makes for a more unfavorable prognosis. However, in our patient the evisceration made immediate surgery imperative and thereby made the diagnosis of congenital atresia of the colon exceptionally early. The intestinal obstruction was relieved surgically before it was able to produce symptoms. The early relief of obstruction in atresia of the bowel is the greatest single factor for a good prognosis.

## SUMMARY

A case of congenital evisceration with atresia of the colon with the patient surviving operation is presented. Untreated cases of atresia of the bowel are uniformly fatal. With the best of surgical treatment the mortality remains high, but early diagnosis and prompt definitive treatment will result in some recoveries.

## REFERENCES

1. Davis, D. L., and Poynter, C. W. M.: Congenital Occlusions of Intestines, with Report of Case of Multiple Atresia of Jejunum, Surg., Gynec., & Obst. 34:35-41 (Jan.) 1922.

2. Duckett, J. W.: Intestinal Obstruction in Newborn, Ann. Surg. 116:321-333 (Sept.) 1942.

3. Farber, S.: Congenital Atresia of Alimentary Tract, Diagnosis by Microscopic Examination of Meconium, J.A.M.A. 100:1753-1754 (June 3) 1933.

4. Heckel, N. J., and Apfelbach, C. W.: Congenital Atresia of Colon, Am. J. Dis. Child. 34:1050-1055 (Dec.) 1927.

5. Iason, A. H.: Congenital Eventration at Umbilicus, Surg. 16:950-955 (Dec.) 1944.

6. Jarcho, J.: Congenital Umbilical Hernia, Surg., Gynec., & Obst. 65:593-600 (Nov.) 1937.

7. Kermauner, cited by Margulies.[11]

8. Ladd, W. E.: Congenital Obstruction of Duodenum in Children, New England J. Med. 206:277-283 (Feb. 11) 1932.

9. Ladd, W. E.: Congenital Obstruction of Small Intestine, J.A.M.A. 101:1453-1458 (Nov. 4) 1933.

10. Ladd, W. E., and Gross, R. E.: Abdominal Surgery of Infancy and Childhood, Philadelphia, W. B. Saunders Co., 1941, ch. 3 and 25.

11. Margulies, L.: Omphalocele (Amniocele); Its Anatomy and Etiology in Relation to Hernias of Umbilicus and Umbilical Cord, Am. J. Obst. & Gynec. 49:695-699 (May) 1945.

12. Massabuau and Guibal, cited by Jarcho.[6]

13. Miller, E. M.: Bowel Obstruction in New Born, Ann. Surg. 110:587-605 (Oct.) 1939.

14. Miller, E. M.: Bowel Obstruction in Newborn, S. Clin. North America 27:73-84 (Feb.) 1947.

15. Nelson, H. M., and Fandrich, T. S.: Congenital Umbilical Hernia, with Eventration, J. Michigan M. Soc. 40:111-112 (Feb.) 1941.

16. Potts, W. J.: Congenital Atresia of Intestine and Colon, Surg., Gynec., & Obst. 85:14-19 (July) 1947.

17. Specht, N. W., and Shryock, E. H.: Omphalocele; Anatomical and Clinical Considerations, Surg., Gynec., & Obst. 77:319-325 (Sept.) 1943.

18. Stanton, N. B.: Three Cases of Congenital Umbilical Hernia, Am. J. Surg. 44:646-648 (June) 1939.

19. Webb, C. H., and Wangensteen, O. H.: Congenital Intestinal Atresia, Am. J. Dis. Child. 41:262-284 (Feb.) 1931.

Dr. Lemon, 404 Medical Arts Building.
Dr. Walker, 3616 Tulsa Way.

### ABSTRACT OF DISCUSSION

**Dr. J. W. Duckett,** Dallas: A distinct service is rendered by the reporting of such a remarkably unusual and well managed case. Undoubtedly one of the main factors contributing to the successful outcome was recognition of the necessity for early operative repair of the defect in the abdominal wall. It has been said that these babies should pass immediately from the hands of the obstetrician to the operating table. This dictum should be followed in every case of omphalocele whether or not the usual membranous covering is present. This sac is derived from the amnionic membrane and is permeable as well as friable. Invasion of bacteria into the peritoneal cavity inevitably takes place and death from peritonitis ensues if the defect is not repaired. Ladd described a patient who was not operated on because there was a broad band of skin covering the base of the sac and it was hoped that the skin would continue to grow and cover the entire sac. This patient died of peritonitis at the end of one week. The method used in closing the defect is not important as long as the essential requirement of a skin covering is met. If the deeper layers cannot be closed at the first operation, the resulting hernia can easily be repaired by closure in layers after delay of from seven to ten days when the abdominal wall will have stretched adequately. Further delay is unwise because of the rapid development of dense adhesions between the intestine and the under surface of the subcutaneous fascia.

Atresia of the colon carries a poorer prognosis than atresias higher in the intestinal tract mainly because the diagnosis of the former is usually more difficult to make in time for early definitive treatment. There is earlier vomiting and less distension with high obstructions; later vomiting and more distension with low obstructions. In both conditions the presence of bile is the danger signal. Investigation with plain roentgenograms of the abdomen should never be delayed when a newborn baby vomits persistently, especially if the vomitus contains bile.

### UROLOGY AWARD

The American Urological Association is offering its annual award of $500 first prize, $300 second prize, and $200 third prize for essays on the result of some clinical or laboratory research in urology. Competition is limited to urologists who have been in such specific practice for not more than five years and to residents in urology in recognized hospitals. Essays must be submitted before February 15, 1949. Full particulars may be secured from the Secretary, Dr. Thomas D. Moore, 899 Madison Ave., Memphis 3, Tenn.

## CONGENITAL FIBROUS BANDS AT THE ANORECTAL LINE

### A POSSIBLE ETIOLOGIC FACTOR IN COLIC AND CONSTIPATION

J. M. COLEMAN, M.D., F.A.A.P.
AUSTIN, TEXAS

The union of proctodeum with the hindgut in the embryo to form the mucocutaneous junction of the anus with the rectum is a complicated pattern which may go awry. Emphasis is usually placed upon the unusual cases of atresia of anus or rectum, imperforate anus, or fistulas of various sorts. This paper is intended to direct attention to the less spectacular but more frequent relatively minor aberrations which may occur. It would appear on the basis of the evidence submitted that incomplete disentegration of the wall of tissue between anus and rectum is not rare or that the line of union may be made up largely of fibrous rather than elastic tissue.

The proctologist looks upon the mucocutaneous junction with its folds and crypts as an important source of rectal pathologic disorder. There is little information available in the pediatric literature other than occasional case reports which would indicate the incidence of lesions at this point. David[3] indicated that congenital anomalies of the rectum and anus are 1 in 5,000.

According to Arey,[1] the rectum and anus arise from two separate embryologic origins. The primitive gut has the two major portions, foregut and hindgut. The hindgut, made up of entoderm, comes into contact with the ectoderm to form a fused plate known as the cloacal membrane.

The cloacal membrane divides into anal and urogenital membranes. The anal membranes rupture when the embryo is approximately 9 weeks old, permitting the proctodeum, which appears as an external depression, to become continuous with the hindgut, thus forming the anal canal. The anus is therefore an ectodermal structure which extends inward to join the rectum, which is derived from entoderm.

In this discussion reference is made to a fibrous band at the mucocutaneous junction which may completely encircle the gut at this point; David[2] has referred to the iris type or to the semilunar types of bands. This should be distinguished from spasm or hypertrophy of the sphincter ani, which is usually associated with fissure. There may or may not be sphincter spasm associated with the condition.

At rectal examination, if this condition

Read before the Section on Pediatrics, State Medical Association of Texas, Annual Session, Houston, April 27, 1948.

exists, the finger is felt to pass through the external and internal sphincter, but about 1 to 2 cm. above the anal opening the tip of the finger meets a fibrous band or ring which may give serious resistance to further examination. The rectal examination in infancy is usually accomplished without evidence of discomfort, but when this fibrous ring is met the infant invariably cries bitterly.

In the office or hospital discarded rubber gloves may be salvaged and the fingers cut off to serve as a supply of disposable finger cots. Vaseline or K-Y jelly completes the equipment. This is sufficient for the diagnosis, the small finger being used for the initial examination.

While theoretically rectal examinations are a part of every complete examination, there is reason to believe it is often neglected. A check on nurseries for newborn infants reveals that few have gloves, much less glove fingers, available. Observation of examinations in the nurseries indicates that such an examination usually consists of separating the buttocks and peeking into the anal vestibule. Even when the finger is inserted it is only enough to stretch the sphincter sufficiently to induce crying, and this desultory maneuver fails to elicit pathologic conditions. A rectal examination is not only good medicine but is also good public relations, for parents feel it is evidence of thoroughness. In the office parents often comment, "No one has ever checked him like that before," or "I wonder why that was not done on my other babies," or, sadly enough, "Why did you not do that last time?"

TABLE 1.—*Incidence of Anorectal Pathologic Conditions in 1,000 Consecutive Patients Under 1 Year of Age.*

| | Age of Child at First Visit | | | | |
|---|---|---|---|---|---|
| | Newborn | Under 1 Mo. | 1 Mo.- 3.9 Mo. | Over 4 Mo. | Total |
| Cases Admitted | 381 | 137 | 157 | 325 | 1,000 |
| Fibrous band only | 23 | 8 | 9 | 2 | 42 |
| Fibrous band and fissure | 10 | 3 | 1 | 2 | 16 |
| Fibrous band & other conditions | — | — | 2† | 2§ | 4 |
| Fissure only | — | 10 | 4 | 11 | 25 |
| Other conditions | 2* | — | 3‡ | 1‖ | 6 |
| Total with pathologic conditions | 35 | 21 | 19 | 18 | 93 |
| Percentage of admissions | 9.2 | 15.3 | 12.0 | 5.5 | 9.3 |

*Includes atresia of rectum and hemorrhoids.
†Fistulas in twins.
‡Includes 2 cases of suspected megacolon and rectal polyp.
§Prolapsis and hemorrhoid.
‖Rectal polyp.

Attention having been centered on this condition by the case of a 4 months old infant who had never passed feces without intervention with suppository or enema, I began to use rectal examinations more frequently. The frequency of rectal findings, linked with the complaints of colic and constipation, led to an effort to determine the frequency of the conditions. For this purpose, 1,000 consecutive case histories of children under 1 year of age were studied. This study was made without regard to the reason for the patient's first visit and without regard for time of discovery of the pathologic condition. One newborn infant cried and strained for 120 days before the rectal examination was made. The result of this analysis is found in table 1.

Examination of table 1 reveals that the incidence of rectal pathologic conditions in those watched from birth is almost identical with the total for the group; however, the character of the conditions changes with age. In infants seen first at the age of 4 to 12 months fibrous bands alone occur in approximately 10 per cent of those showing pathologic conditions of the rectum, whereas in newborn infants, generally subject to earlier rectal examinations, fibrous bands made up approximately 66 per cent of such conditions. This leads to the question, "Is this pathologic entity primarily responsible for the development of fissures, fistulas, and prolapsis?"

The fact that incidence of rectal pathologic conditions is greater in the group seen for the first time after completion of newborn care in the hospital and before the fourth month than in newborn infants is not contradictory. The parents of these patients make a change in the program or in doctors because of dissatisfaction with the program of care given. In this combined group of 40 patients with pathologic conditions of the rectum, parents were questioned about previous care and in only 1 case did the parents know of a rectal examination being made.

TABLE 2.—*Frequency of Complaints in 86 Patients Found to Have Fibrous Bands, Bands and Fissures, or Fissures in Ano.*

| Symptoms | Frequency |
|---|---|
| Colic (parent's term) | 49 |
| Straining at stool | 48 |
| Constipation | 39 |
| Bowel movement only with suppository or enema | 29 |
| Blood on stool | 20 |
| Refusal of food | 19 |
| Gas | 16 |
| Vomiting of food | 14 |
| Diarrhea | 12 |
| Painful defecation | 10 |
| No symptoms—incidental finding | 1 |

In general, patients found to have fibrous bands without fissures and those with bands and fissures, and cases of fissure alone presented a similar symptom complex (table 2).

It is significant that only 1 patient of the group found to have bands or fissures had no complaints. It appears that these conditions are frequently associated with so-

called colic, constipation, and use of enemas and suppositories.

Marriott[1] divided the condition known as colic into three large groups, 70 per cent due to underfeeding, 15 per cent to overfeeding. and 15 per cent with no definite cause. It appears that these conditions may in part explain some of the last 15 per cent listed.

Refusal of food and vomiting are fairly prominent in the symptom complex. The usual story of refusal of food is that the patient starts nursing hungrily but soon stops, stiffens out, and cries; he may resume eating but the process is repeated over and over during feeding.

Three of the patients in this group were hospitalized as possibly having pyloric stenosis because of the projectile vomiting. In other cases vomiting seemed definitely associated with the effort to pass the stool. Relief was obtained by relieving the rectal condition.

If fibrous bands and fissures are etiologic factors in colic and constipation, logically relief should be obtained when treatment is given. The treatment used consisted of dilatation of the band, or the spastic sphincter in the case of fissures, in the office, until dilatations by the fingers resulted in relaxation of the occlusion. No further therapy was required. In a few cases, the band remained tight and parents were instructed in the technique. Bougies were not used; the finger serves the same purpose and at the same time gives tactile evidence of progress. The results of this therapy seem good (table 3).

TABLE 3.—*Results of Treatment in 93 Cases of Rectal Pathologic Conditions.*

| | |
|---|---|
| Apparently completely relieved of symptoms by dilatation | 80 |
| Improved, occasional mild bouts of colic and/or constipation | 7 |
| Not improved | 2 |
| Patient lost for record purposes | 4 |

In a few cases, fissures in ano had become indurated to form fibrous walls; these were cauterized with lunar caustic.

Fibrous bands were found in 6 children over the age of 1 year. This number is so small in relation to total cases that no statistical comparison can be made. The complaints in these 6 cases are of interest. All were constipated, 2 were frank behavior problems, 2 suffered from day terrors, 1 completely rejected toilet training, and 1 had convulsions apparently related to constipation.

Typical case reports follow:

## CASE REPORTS

CASE 1.—This 23 day old infant had colic, constipation, apparent pain on defecation, refusal of food, and apparent gas. The symptoms were relieved by one dilatation and the mother ignored advice to dilate the band every two days. Two months later fissures in ano developed and the band was still tight. Repeated dilatations resulted in cure in both conditions.

CASE 2.—This 4 weeks old infant was referred because of incessant colic; the referring physician had tried five different formulas without result. The grandparents were impressed by the straining at stool though the stools were liquid in character. The baby did not gain because of its refusal to finish a feeding. At examination there was found a fibrous band which barely admitted the tip of the finger; the band tore during examination. The parents were advised to return in two days but waited two weeks because the infant quieted down from the crying induced by examination and slept through the first night. There had been no colic since the infant began an ounce a day gain.

CASES 3 and 4.—Twin boys, age 10 weeks, were brought for pediatric supervision. These babies had progressed well except for occasional constipation and rather persistent straining at stool which was viewed as a rather comical activity. Twin A had a small furuncle beside the anus and examination revealed that there was inflammatory reaction extending down beside it. The infant violently objected to examination. The furuncle was incised and the parents were advised of the possibility of a fistula developing. At 14 weeks a fistula was present and was referred for surgery. The infant was operated on successfully and was returned to the surgeon's office for postoperative dilatation. When the infants were 18 weeks old the mother realized that twin B was still straining and recognized that preoccupation by all concerned with twin A had led to failure to do a rectal examination on twin B. She mentioned this to the surgeon, who made an examination and found an apparent beginning induration at one of the crypts. He prescribed dilatation and the parents performed it. The infant developed a furuncle exactly as in the case of the brother; it was incised and when the baby was 24 weeks old it had apparently healed, though longer observation will be required.

CASE 5.—A white boy, age 10 weeks, was brought in after visiting three other physicians. He had changed from breast to evaporated milk with Karo, then to evaporated milk and Dextri Maltose No. 3, He never had a bowel movement without an enema or Castoria. Bowel movements were preceded by grunting and groaning. He had slept little recently. Examination revealed a tight anal band and hemorrhoids. Dilatation was accompanied by pain and was followed by a large evacuation. The infant initiated bowel movements for three days following the examination and dilatation. Eight days after the initial visit he was returned for a second dilatation following which he initiated bowel movements regularly until last seen five months later. At the second examination the band was reduced in rigidity and the opening was definitely increased in size. No formula change was made.

CASE 6.—A white boy, age 31 days, was referred because of straining at stool and fresh blood in the stools. The infant had strained for his stools since birth, though he often had eight or ten small soft movements per day, most of which were preceded by crying and screaming. Examination was essentially negative except for the anus. Inspection revealed no evidence of a fissure but the anal sphincter was extremely tight. Speculum examination revealed a deep fissure located on the anal wall above the external sphincter and leading up to the dentate line where a tight band encircled the anus. Hemorrhoids were present internally. Dilatation was performed with bleeding of approximately 1 drachm. Dilatation was

repeated on the third, fourth, seventh, tenth, fourteenth, twentieth, twenty-fifth, and thirty-first days after the first visit. The band remained rigid for twenty days, but the parents were enthusiastic about progress in reducing colic and pain at stool. Six months have elapsed; rectal examination causes no pain, the fissure is healed, the band has disappeared, and no hemorrhoids are noted. Stools are regular and without pain.

CASE 7.—A white boy had an uneventful delivery on October 14, 1947. The birth weight was 7 pounds. No rectal examination was done in the hospital. On November 7 he was brought in because of vomiting and failure to gain. He had lost feedings frequently and during the last three days had projectile vomiting coming on during nursing, usually just before nursing seemed complete. There was a bowel movement at each feeding, small and soft but apparently painful as the infant stiffened out and turned loose of the nipple. There was apparently a great deal of gas, and he cried day and night. Water and orange juice (diluted) were taken and retained.

The infant weighed 7½ pounds; he looked thin. Examination was negative except for the anus. The small finger could be introduced into the anus for about one-half the distance to the first joint. At this point the tip of the finger encountered a small opening about the size of the ordinary soda straw. This ring split when pressure was applied by the examining finger, which was held in place for two minutes.

Pylorospasm was suspected from the history and mesopin with phenobarbital was prescribed. The formula was not changed. Nothing was heard from him until December 8, when he weighed 10 pounds. The mother did not use the drops prescribed because he did not vomit again after the dilatation. On March 12, 1948, he weighed 16 pounds and had been free of any symptoms referrable to the gastrointestinal system.

### COMMENTS

Colic and constipation are troublesome symptoms in infancy. Uncorrected they cause the physician to lose patients because of lack of parental confidence. Emphasis should be placed on the fact that in most cases where the symptoms are related to the conditions described, relief is dramatic. Immediate and complete relief is the most frequent outcome after a single treatment. Even where repeated treatments are required, parental morale is high because of evident improvement. The condition is always described in detail to parents. Not one of the infants still under my care is on laxatives or cathartics of any type.

### SUMMARY

An analysis of 1,000 consecutive admissions of children under 1 year of age to a private practice reveals an incidence of rectal pathologic conditions of 9.3 per cent. Fibrous bands at the ano-rectal junction were the most frequent finding. Possible relationship between these bands and the development of fissures, fistulas, prolapsis, and hemorrhoids apparently exists. Fibrous bands and fissures are a frequent finding in "colic" and constipation. Treatment of these conditions frequently results in startling amelioration of the symptom complex.

1506 Guadalupe Street.

### REFERENCES

1. Arey, L. B.: Developmental Anatomy, ed. 2, Philadelphia, W. B. Saunders Co., 1930, pp. 176-179.

2. David, V. C.: Surgery of Rectum and Anus, in Lewis' Practice of Surgery, Hagerstown, Md., W. F. Prior Co., 1943, vol. 7, ch. 6.

3. David, V. C.: Diseases of Colon and Rectum, in Brennemann's Practice of Pediatrics, Hagerstown, Md., W. F. Prior Co., 1945, vol. 3, ch. 7.

4. Marriott, W. McK.: Infant Nutrition, St. Louis, C. V. Mosby Co., 1930, pp. 253-256.

## SALPINGIOSIS (ENDOSALPINGIOSIS)

CASE REPORT

EVELYN GASS POWERS, M. D.

and

O. N. HOOKER, M. D.

AMARILLO, TEXAS

Von Robitansky described an adenomyoma of the pelvis in 1860. This is apparently the first record of that important and puzzling entity variously called endometriosis, müllerianosis, endometrioma, salpingiosis, endosalpingiosis, and adenomyosis. Von Recklinghausen published articles from 1893 to 1896 describing these tumors and advanced the theory that they developed from embryonic rests of the wolffian ducts. About this time, Cullen began his work on adenomyomas and was the first to hold that they were invasive growths rather than embryonic structures inactivated in later life. In 1899 Russell reported finding such a tumor in an ovary which he had removed and ascribed its presence to misplaced portions of the müllerian duct.

However, there was little general interest in the subject and only 20 cases had been reported up to 1921 when Sampson added 23 and advanced his theory of transplantation of cells through the tubes. He has done much work on endometriosis since that time and has helped to make it one of the most important subjects in gynecology at present.

In his first paper Sampson stressed the possibility of endometrial and tubal epithelium being regurgitated through the tubes during menstruation and attaching themselves to the ovaries or other pelvic structures where they become imbedded and form tumors. While this explanation of the histogenesis of endometriosis has not been accepted by everyone, it can certainly not be disproved in every case, especially since the tubes have been found to be patent in most instances and retroversions, fibroids, and other obstructions to the menstrual flow are a frequent accompaniment of the condition.

Read before the Section on Obstetrics and Gynecology, State Medical Association of Texas, Annual Session, Dallas, May 7, 1947.

However, Sampson did not assume that all cases arise in this way. He demonstrated endometrial and tubal epithelial cells in the lymph and blood channels and published a paper to show "the structural similarity between peritoneal endometriosis and peritoneal carcinomatosis of ovarian origin." Like cancer, the endometrium or endosalpinx or both may be found invading the adjacent tubal or uterine walls and thus be spreading by continuity, or they may be found in the ovary or some remote portion of the pelvis. Endometrioma have been found frequently in lymph glands and Schwarz has found endometriosis of the lung. Counseller

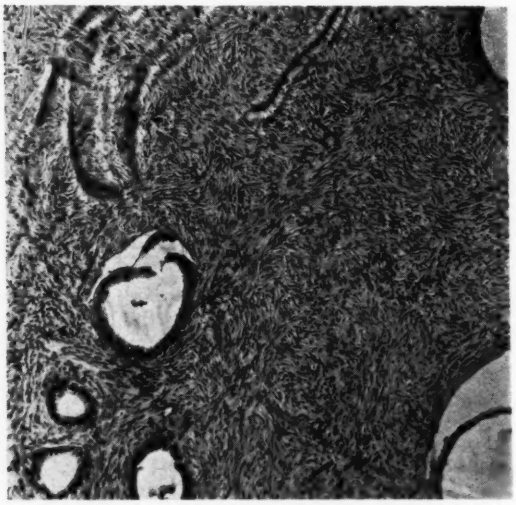


FIG. 1. Photomicrograph of tissue from the right ovary in a case of salpingiosis.

considered this hypothesis of the spread by the lymph channels as the most satisfactory of all the theories.

Novak made a strong case against Sampson's idea of transplantation of viable epithelial cells from the regurgitation of the menstrual blood through the tubes. He preferred the serosal or celomic concept.

The pelvic peritoneum, the germinal epithelium, the tubal mucosa, and the endometrium are closely related since they are all derived from the celomic epithelium of the urogenital folds. It is not necessary, therefore, to assume that the presence of ectopic tubal or endometrial tissue always represents embryonic rests, but it is possible that some germinal cells, in the ovary for instance, may have their developmental potential stimulated by some chemical factor and thus change into tubal and/or endometrial cells. Novak expressed the belief that he can demonstrate this metaplasia in sections from these tumors. He also suggested that the frequency of the condition in the ovary is due to the proximity of the source of supply of the hormones, "that perhaps there is a greater intensiveness of the endocrine hormone in the ovary itself."

Counseller has opposed this celomic theory. He said, "Although the common celomic origin of the peritoneum, the ovary, and the müllerian ducts might be consistent with these hypotheses, it seems that they assume profound histologic and physiologic changes for adult peritoneum; it is clearly established that the ovarian hormones have an important effect on the fully developed endometrium, but it is certainly not established that they might initiate the development of these lesions."

Endosalpingiosis is the term that Sampson applied to those tumors which contain epithelium having the characteristics of that of the tubes, and in his later papers he stressed the frequency and importance of aberrant tubal epithelium. It is fairly common in laparotomy scars after surgery involving the tubes or even in cases where the tubes were only manipulated. This tubal epithelium apparently undergoes a form of metaplasia at times assuming the characteristics of the endometrium.

While most authors mention endosalpingiosis in discussions of endometriosis and the term müllerianosis has been coined to cover both entities, there are few case reports of endosalpingiosis per se. Therefore we wish to report the following case:

## CASE REPORT

Mrs. B. M. O., a white woman 64 years of age, was first seen by one of us (E.G.P.) on March 12, 1946. At this time she stated that she had passed some blood two days previously. She had been uncomfortable on the day before the spotting with pains low on both sides and over the bladder area, and there had been frequent urination so that she was not certain whether the bleeding was from the vagina or the bladder. In addition, she had had a constant low backache on the right for some time.

The patient had been exceedingly nervous for years and had taken a daily dose of diethylstilbestrol for many months. This had been prescribed by a physician and the exact dose could not be ascertained.

Her past history was negative. There had been few illnesses, two full term pregnancies, and no miscarriages. The menstrual life had been normal with an uneventful menopause between 48 and 50 years of age.

Examination at this first visit showed no abnormality in the urine or lower urinary tract and no evidence of vaginal bleeding. The cervix was atrophic and free of discharge. Its only pathologic manifestation was a small red spot about the size of an endometrial transplant, but this did not have a hemorrhagic appearance and did not seem capable of recent bleeding. Bimanual vaginal examination revealed a small but tender, hard, nodular mass lying between the cervix and the rectum on the

right. The uterus was small and nothing else was palpable in the pelvis.

The patient was advised to discontinue the stilbestrol since it seemed certain that the bleeding had resulted from this medication. It also appeared that the small tumor was a prolapsed right ovary although it was hard to explain the presence of such marble-like nodules on its surface. The urinary tract was thoroughly explored and nothing was found except a slight stricture of the urethra. A sigmoidoscopic examination was also made with negative findings.

Three days later there was bleeding for fifteen hours. This was accompanied by much pain. There were no other hemorrhages after this which seemed to confirm the belief that the diethylstilbestrol had initiated the bleeding. Upon examination on April 30 the patient was comfortable, the red spot had disappeared from the cervix, and the ovary was less tender.

She was not seen again until late August, at which time she came in complaining of pain and discomfort in the right inguinal region. The nodular mass had more than doubled its size and was extremely tender. Immediate surgery was advised but was delayed until Ocober 9, 1946.

At laparotomy, the small tumor proved to be the right ovary. It presented an unusual appearance because of many small, thick walled cysts imbedded in a fibrous stroma. While its dimensions were only 6 by 3 by 3 cm., it gave the impression of being much larger because of the irregularity of its surface. Some of the cysts were multilocular while others contained only one cavity. There were a few drops of either a cloudy or clear yellowish fluid in each of these sacs. The left ovary was atrophic but was undergoing the same cystic changes. Both tubes were normal, and the uterus showed only senile degeneration with a few tiny subserous fibroids.

Both ovaries and the right tube were removed, the latter because of its proximity to the right ovary, which was considered as potentially malignant.

The pathologic report on the microscopic sections was as follows:

"On section the stroma is firm and fibrotic in appearance. Sections through each of the specimens described grossly show ovarian tissue in which cysts are located. The stroma is extremely fibrotic. The cysts mentioned vary considerably in size. These cysts are not of ovarian origin. They are lined by epithelial cells which bear a striking resemblance to those which line the tubes. Some of these cysts are small, others are medium sized. In these, there are a few scattered structures which resemble tubal folds. The whole picture is characteristic of ovarian salpingiosis.

"Pathologic diagnosis: Fibrosis bilateral. Salpingiosis bilateral."

It seems to us that this case is interesting because of the age of the patient and the possible role played by the stilbestrol medication. Most cases of endometriosis or salpingiosis have occurred in women between the ages of 30 and 50. Our patient was 65 a few days after her operation and had not menstruated in fifteen or sixteen years.

W. H. Bradford of Charlotte, N. C., reported a case of postmenopausal endometriosis following stilbestrol therapy of .5 mg. daily for eighteen months. This patient had been bleeding for six months after having had complete amenorrhea for five years. The abdomen was opened and a dark cystic mass the size of a hickory nut was found attached to one ovary. Both ovaries were small and atrophic and were removed along with the supravaginal portion of the uterus. Endometrial tissue was found in both ovaries and in the uterine musculature as well as in the normal location. This endometrium was active in spite of the nonfunctioning nature of the ovaries, showing that

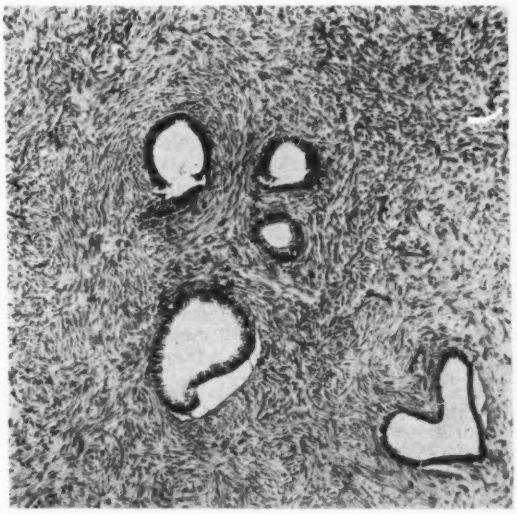


FIG. 2. Photomicrograph of tissue from the left ovary in a case of salpingiosis.

estrogenic hormones had been furnished from some other source.

The pathologists reporting on the tissues from our case stressed the fibrotic condition of the ovarian stroma. Inasmuch as the past history of this patient suggests no previous disturbance, the question arises whether the diethylstilbestrol caused a metaplasia of ovarian germinal cells according to the celomic concept or merely reinactivated a previously existing endosalpingiosis.

REFERENCES

1. Counseller, V. S.: Clinical Significance of Endometriosis, Am. J. Obst. & Gynec. 37:788-797 (May) 1939.

2. Goodwin, W. H.: Endometriosis, South. M. J. 25:325-332 (April) 1932.

3. Graves, W. P.: Gynecology, ed. 4, Philadelphia, W. B. Saunders Co., 1928.

4. Hill, L. L., Jr.: Aberrant Endometrium, Am. J. Surg. 18:303-321 (Nov.) 1932; abstr. J.M.A. Alabama 2:7275 (Aug.) 1932.

5. King, R. C.: Endometriosis, Ohio State M. J. 33:390-393 (April) 1937.

6. Novak, E.: Gynecological and Obstetrical Pathology, with Clinical and Endocrine Relations, ed. 2, Philadelphia, W. B. Saunders Co., 1947.

7. Sampson, J. A.: Pelvic Endometriosis and Tubar Fimbriae, Am. J. Obst. & Gynec. 24:497-542 (Oct.) 1932.

Dr. Powers, 403 Fisk Building.
Dr. Hooker, 904 West Seventh Avenue.

# REEVALUATION OF THE LOW CERVICAL CESAREAN SECTION

ROBERT F. McDONALD, M. D.
FORT WORTH, TEXAS

It is interesting to trace the development of the operation known as cesarean section, and to note the fluctuation in popularity of the various type procedures as reflected in the scientific literature of the various periods.

While much reference is made to the operation in the folklore of early European races, contrary to popular belief there is nothing to indicate that it was ever attempted on a living patient prior to 1500 A. D. In that year it is recorded that one Joseph Nufers, a Swedish sow-gelder, delivered his wife by an abdominal section after all other attempts at delivery had failed. While the patient apparently survived, other cases were reported in the next two or three centuries with almost 100 per cent mortality until Porro in 1877, realizing a need for abdominal delivery and cognizant of the dangers of sepsis, performed supravaginal amputation of the uterus after section of its wall to deliver the fetus. The stump of the cervix was then sutured to the abdominal incision. Although this was a radical procedure, it must be remembered that this was in the pre-antiseptic era and this operation provided the obstetrician with an alternative to fetal destructive operations in the case of absolute fetomaternal disproportion.

In 1882 Sanger first sutured the uterine wall following abdominal section, and his procedure, with improvements and refinements, became the classical operation of today. An easily executed and practical procedure, it afforded little protection against peritonitis in cases subjected to more than minimal amounts of labor, particularly where the natural protection afforded by intact membranes had been lost.

In an attempt to provide a safer means of abdominal delivery without the sacrifice of the uterus in potentially infected cases, Frank of Cologne in 1907 reported what appears to have been the first true extraperitoneal approach. Sellheim and Latzko in 1908 also performed true extraperitoneal operations, but the procedure was difficult and met with little popularity at that time.

That the need for an improved operation remained acute is emphasized by Davis,[3] who in 1911 reported 103 consecutive classical operations performed at the New York Lying-In Hospital with a maternal mortality rate of 16 per cent. As heretofore, the greatest mortality factor was sepsis. It was not until four years later in 1915 that great strides were made toward a lower mortality rate with the introduction of the low cervical operation by Kronig and Opitz of Vienna. This operation, making use of the uterovesical fold of peritoneum to cover the uterine incision, was soon afterward introduced and popularized in this country by Beck[2] of Long Island College and DeLee[4] of Chicago, the latter giving it the name of laparotrachelotomy.

This new approach with incision through the lower passive, or noncontractile, portion of the uterus afforded certain advantages over the classical type section. Usually less hemorrhage was encountered from the uterine sinuses; there was less likelihood of subsequent rupture following its use; and postoperative adhesions were thought to be less frequent. The flap covering the uterine incision was not considered bacteria-proof, but it prevented in a large measure the postoperative spill of infected lochia.

During the twenty years immediately prior to 1940 the low cervical operation became established as the procedure of choice in cases where considerable labor had ensued, particularly in the face of ruptured membranes. The morbidity and mortality rates were no higher than those encountered with the use of the classical section. However, in the infected or potentially infected case little confidence was held in the protection afforded by the low cervical procedure. Indeed, Dieckmann[5] reported a series of cases from the Chicago Lying-In Hospital in 1945 and concluded that the low cervical operation could no longer be used with safety after twenty-four hours of labor in the presence of ruptured membranes, or after a maximum of two rectal and two sterile vaginal examinations.

To meet the need of the infected or potentially infected case, and to obviate the further use of the Porro operation, the extraperitoneal operation again came into prominence during the early 1930's. It is beyond the scope of this paper to attempt to detail the variations in technique of the various proponents of this type operation. In the hands of obstetricians having large clinical resources at their disposal, the original Latzko and Physick-Frank-Sellheim procedures were perfected to the point of practicability. The operation remains difficult, however, as the approach is not anatomic and it is often difficult to secure adequate exposure of the lower uterine segment to permit the extraction of a large fetus. Acci-

Read before the Section on Obstetrics and Gynecology, State Medical Association of Texas, Annual Session, Dallas, May 7, 1947.

dental injuries to the bladder and peritoneum, while usually not serious, are frequent and troublesome. The postoperative course is usually marked by longer and more serious morbidity and considerable drainage.

In 1941 Henry Burns[9] of New York had performed 59 Latzko and 5 Waters operations without a maternal death. Indeed, Burns at that time did not use the low cervical operation, performing a low classical incision on elective cases and an extraperitoneal operation for all others. In his hands and in those of Steele,[10] Waters, Ricci,[8] Marr, Aldridge,[1] and others the extraperitoneal section has been established as an invaluable procedure for salvaging the mismanaged case subjected to attempts at vaginal delivery.

A gradual drop in the maternal mortality rate of cesarean section has been in evidence for the past fifteen years. Irving,[7] reporting in 1945 on a series of 1,887 consecutive cesarean sections performed at the Boston Lying-In Hospital during the ten year period ending in December, 1943, gave a maternal mortality figure of 1.3 per cent. This low figure compiled at a well organized maternity hospital is considerably below the 2.4 per cent mortality of the country at large, but Irving concluded that normal delivery was still 15 times safer for the mother and 2.5 times as safe for the infant. On the other hand, he concluded that section was just as safe for the mother as midforcep operations and 8 times safer for the infant. In the mortality breakdown according to type of section used, Irving reported 1.3 per cent mortality for the classical, 0.9 per cent for the low cervical, 2.4 per cent for the extraperitoneal, and 4.3 per cent for the cesarean-hysterectomy. The morbidity for both the classical and low cervical procedures was 20 per cent; for the extraperitoneal it was 40 per cent.

Since the introduction and general availability of penicillin I have employed the low cervical section with increasing confidence in an admittedly small series of cases. It is thought that the early and adequate use of penicillin, together with the local use of sulfathiazole, has added the protection necessary to make the operation a much more valuable procedure. Selected as typical of the group are the 4 cases herein presented.

In each case the uterovesical fold of peritoneum was dissected free from the musculature of the lower uterine segment in such a manner as to afford two protective flaps. The lower segment was incised transversely according to the method of Kerr to facilitate the use of the flaps. Sulfathiazole powder was used freely beneath the flaps and in the pelvis. To keep spill of amniotic fluid to a minimum the uterus was pulled up against the abdominal incision and packed off. Little Trendelenburg position was used. In all cases penicillin therapy was instituted as soon as it was apparent that cesarean section would be necessary, and it was continued in dosage of 30,000 to 40,000 units every three hours for three or four days, depending upon the patient's temperature.

## CASE REPORTS

CASE 1.—Mrs. B., 24 year old gravida 1, para 0, at term was first seen in consultation after some forty hours of labor with the fetus in the right occipital posterior position, the presenting part just above the ischial spines and with the membranes intact. The cervix was thin and from 5 to 6 cm. dilated. As pains were becoming weaker and roentgen-ray examination showed no disproportion, it was elected to give the patient rest by the administration of more sedation and intravenous glucose. When after several hours the pains did not pick up, the membranes were artificially ruptured. After a total of sixty hours of labor with membranes ruptured for twenty-four hours, a low cervical section was performed with delivery of a normal 6 pound 11 ounce infant. This patient had six sterile vaginal examinations, artificial rupture of the membranes, and at least five rectal examinations. Her postoperative course was uneventful except for five days of fever with a maximum elevation of 102.6 F. on the third day. There was no drainage or undue abdominal distension and the patient was discharged on the tenth day.

CASE 2.—Mrs. G., 23 year old gravida 1, para 0, was two weeks past her expected delivery date and in hard labor for thirty-six hours. The fetus was large with the head in left occipital transverse position at the level of the ischial spines. The membranes were intact and the cervix was 6 cm. dilated and thin. The membranes were artificially ruptured and, after no progress for an additional four hours, fetal distress was evidenced by the passage of meconium and a marked fluctuation in the fetal heart rate. Low cervical section was performed with delivery of a normal 8 pound 6.5 ounce infant. This patient had innumerable rectal and at least four vaginal examinations prior to delivery. Maximum elevation of temperature was 102 F. on the second day, and she was free of fever by the fifth day. Lochia was foul but there was no evidence of peritoneal irritation. The patient was discharged on the eighth postoperative day.

CASE 3.—Mrs. F., 20 year old gravida 1, para 0, was seen with a large fetus in transverse arrest after eighteen hours of hard labor with ruptured membranes for six or eight hours. The head was above the ischial spines and the cervix was 6 cm. dilated and edematous. A 9 pound 10.5 ounce normal infant was delivered by low cervical cesarean section. This patient had eight rectal and two vaginal examinations. Maximum temperature elevation was 102 F. on the second day, and the patient remained afebrile after the fourth day. Penicillin was discontinued on the third day because of the development of a severe rash about the buttocks. The patient was discharged on the eighth day.

CASE 4.—Mrs. K., 38 year old gravida 1, para 0, was at term and in labor for twenty-four hours. The membranes ruptured prior to the onset of labor

by three or four hours. The fetal head was unengaged; the cervix was from 3 to 4 cm. dilated and thin. Low cervical section was performed with delivery of a normal 8 pound 1 ounce infant. This patient had eight rectal examinations and one vaginal examination. The maximum temperature elevation was 99.6 F., and the patient remained afebrile after the first postoperative day.

Prior to the introduction of penicillin each of the above cases would have demanded the use of the extraperitoneal section; however, in each case there was a minimum period of morbidity. Each patient had a normal puerperium and was quickly restored to a state of usefulness as a mother. While the series is admittedly too small for the formation of definite conclusions, it is thought provoking. If obstetricians by employing the low cervical section with chemotherapy can provide a haven of safety and give patients a longer test of labor, certainly a drop in the incidence of cesarean section will result. In the past the fear of sepsis has prompted obstetricians to the early use of cesarean section while the patient is yet uninfected.

While further trial may well establish the low cervical procedure for all cases, until that time the extraperitoneal procedure will occasionally be necessary, and it must be remembered that no matter how perfectly it is executed it will not salvage the patient subject to a blood stream infection. It is to be hoped that the early adequate use of penicillin together with the careful supervision of the prolonged and difficult labor case will add further impetus to the rapidly declining mortality rate of cesarean section.

REFERENCES

1. Aldridge, A. H.: Extraperitoneal (Latzko) Cesarean Section, with Report of Cases and Suggested Modifications in Technic, Am. J. Obst. & Gynec. 33:788-800 (May) 1937.
2. Beck, A. C.: Series of Cases of Cesarean Sections, Am. J. Obst. 79:197 (Feb.) 1919.
3. Davis, A. B.: Extraperitoneal Cesarean Section (Gastroelytrotomy) in Presumably Infected and Mismanaged Cases of Prolonged Labor, Am. J. Obst. & Gynec. 7:373-383 (April) 1924; also in Bull. Lying-In Hosp., New York 13:68-83 (May) 1924.
4. DeLee, J. B.: Newer Methods of Cesarean Section, J.A.M.A. 73:91 (July 12) 1919.
5. Dieckmann, W. J.: Cesarean Section Mortality, Am. J. Obst. & Gynec. 50:28-48 (July) 1945; correction 51:298 (Feb.) 1946.
6. Hiett, C.: Extraperitoneal Cesarean Section, with Report of Cases, Texas State J. Med. 33:626-631 (Jan.) 1938.
7. Irving, F. C.: Ten Years of Cesarean Section at Boston Lying-In Hospital, Am. J. Obst. & Gynec. 50:660-680 (Dec.) 1945.
8. Ricci, J. V.: Simplification of Physick-Frank-Sellheim Principle of Extraperitoneal Cesarean Section, Am. J. Surg. 47:33-40 (Jan.) 1940.
9. Ryder, G. H.: Comparison of Classical and Lower Segment Cesarean Section, Am. J. Obst. & Gynec. 41:1029-1037 (June) 1941.
10. Steele, K. B.: Extraperitoneal Cesarean Section; Analytic Study of 59 Cases Done by Latzko Method, Am. J. Obst. & Gynec. 19:747-759 (June) 1930.
11. Waters, E. G.: Use and Abuse of Cesarean Section, Am. J. Surg. 69:208-212 (Aug.) 1945.

603 College Avenue.

## ABSTRACT OF DISCUSSION

**Dr. Asa A. Newsom**, Dallas: Dr. McDonald's review of the literature concerning the development of the different types of cesarean section and the presentation of his method of management for several complicated obstetric cases is interesting and thought producing.

Among the questions arising are (1) can better training in obstetrics cause a decrease in the number of mismanaged cases, and (2) has the development of sulfonamide and penicillin caused procrastination in handling of complicated cases?

The residents in obstetrics checked the cesarean section records in Baylor Hospital from September, 1936, to September, 1941, and found a total of 92 cases. The classical section was performed 47 times and the low cervical 43 times. There was 1 Porro section and 1 vaginal hysterotomy but no extraperitoneal procedure. There was 1 death following a classical and 1 death following a low cervical section. Transfusion was used often and sulfanilamide was used 3 times. These charts included both elective and neglected cases.

They also reviewed the charts from September, 1941, to September, 1946, and found 382 cesarean sections. Of this number 170 were classical, 201 low cervical, 11 Porro, and no extraperitoneal. There was about a 50 per cent morbidity in all types and 2 deaths following classical section. Sulfonamide was used in 73 cases and penicillin in 46 cases. These drugs were used more often during the last two years. Transfusion was also used.

The use of penicillin and sulfonamide early, as the essayist has pointed out, should decrease the number of uteri removed and narrow the indications for extraperitoneal sections. However, the use of these drugs should not be allowed to make the physician careless in analyzing and handling major complications in obstetrics.

## HIGH BLOOD PRESSURE FROM TUMORS

High blood pressure in some persons appears to be caused by a certain type of tumor found in the adrenal and coccygeal glands, along the nerves, and in other organs, says George F. Cahill, M. D., of the J. Bentley Squier Urological Clinic and the Department of Urology, College of Physicians and Surgeons, Columbia University, New York.

Writing in the September 18 issue of *The Journal of the American Medical Association*, Dr. Cahill points out that this kind of high blood pressure can be cured by locating the tumor with roentgen ray and removing it by surgery.

Cases which Dr. Cahill has treated show that this type of high blood pressure seems to result from the release of adrenalin from these tumors. It occurs both in children and in adults and is sometimes difficult to distinguish from hyperthyroidism, hysteria, and psychoneurosis, he says. It may be continuous or may occur only in acute attacks, the article points out. Symptoms consist of a pounding headache, pronounced beating of the heart, constriction of the hands and feet, and pain just above the stomach.

Commenting upon Dr. Cahill's article, Dr. Earl E. Ewert of Boston says in the same issue of *The Journal* that persons who appear to have typical seizures of epilepsy may also be suffering from this type of tumor.

## THYROID GLAND ESSAY PRIZE

The American Goiter Association is again offering the Van Meter Prize Award of $300 and two honorable mentions for the best essays concerning original work on problems related to the thyroid gland. Details of the competition, which will end March 15, may be secured from Dr. T. C. Davison, corresponding secretary of the association, 207 Doctors Building, Atlanta 3, Ga.

# FOREIGN BODY REACTION TO SUTURES AND OTHER MATERIALS

STUART A. WALLACE, M. D.
and
MAJOR KENNETH L. BROWN, M. C.
HOUSTON, TEXAS

Generally speaking, any material introduced into the tissues by routes other than the circulation is a foreign body regardless of what its physical or chemical properties may be.[1] However, occasional instances of particulate matter entering the circulation, such as small bullets or shot, and nonabsorbable oils should probably also be considered as foreign bodies. In the usual conception particulate matter which occupies space and which sets up a mechanism in the body to isolate it or to dispose of it constitutes a foreign body. The reaction of the host tissues produced constitutes the foreign body reaction. Foreign bodies therefore need not necessarily be introduced; they may originate within the tissues themselves. The urate crystals in gout and the escaped contents of sebaceous cysts are examples of particulate matter arising within the body.

The purpose of this paper is to discuss the usual reactions to the more common foreign bodies, and to one or two unusual types. A consideration of the many metal and glass objects found in the gastro-intestinal tract is purposely avoided as is the most mild reaction to fine inhaled dust particles. Some representative findings are discussed with respect to tissue changes subsequent to the insertion of suture materials in rabbits, the complete study of which will be reported elsewhere, and concerning a variety of foreign bodies in tissues which passed through the pathology laboratory of Baylor University College of Medicine.

## SUTURE MATERIAL IN RABBITS

Suture materials lend themselves to a study of this kind providing careful surgical technique is used to exclude bacterial contamination. Dermal material, nylon, and cotton illustrate nicely the foreign body reaction. They also avoid the other factors which come into the picture with absorbable suture materials.

All sutures in this study were placed in the dorsal muscles of rabbits with as little trauma as possible. One group of animals was killed at the end of seven days and a block of muscle including the suture was placed in 4 per cent formaldehyde. After fixation sections were made and stained in routine fashion using hematoxylin and eosin stains. Another group was killed after the suture material had been in place for thirty-one days.

*Dermal.*—In the muscle with dermal suture material removed at the end of seven days there was seen a moderate number of polymorphonuclear neutrophils close to the suture material. Next were macrophages lined up in fairly definite fashion. Beyond this were already present several newly formed muscle giant cells. The muscle fibers were damaged for considerable distance from the suture.

After thirty-one days there was more profound change in the muscle with many voluminous muscle giant cells. The nuclei of muscle fibers had in one instance apparently migrated centrally in the muscle fiber. Small macrophages were present in profusion and a moderate amount of fibrous connective tissue had formed.

FIG. 1. Nylon suture with fibrous tissue reaction.

Dermal is not intended for such use but it is interesting to note the profound effect that this material has on the muscle fibers.

*Nylon.*—At the end of seven days cells in the muscle containing nylon were lined up around the suture and were apparently macrophage type of cells. Beyond these cells could be seen a moderate amount of fibrous connective tissue. The arrangement suggested somewhat synovial tissue. There were no foreign body giant cells in the sections studied and no muscle giant cells.

At the end of thirty-one days the macrophages were still lined up around the nylon suture. There was fibrous connective tissue in moderate amount only. At this stage a few muscle giant cells were noted and in ad-

From the Department of Pathology, Baylor University College of Medicine.
Read before the Section on Clinical Pathology, State Medical Association of Texas, Annual Session, Houston, April 28, 1948.

dition there was considerable change in the muscle fibers in that they were reduced in size and frequently fragmented.

*Cotton.*—After seven days there were present macrophages lined up about the cotton suture at right angles. There was a marked fusiform fibrous connective tissue proliferation forming a fusiform pattern. Capillaries were prominent. The interrupted muscle fibers were narrowed for some distance and a few muscle giant cells were present. The fusiform production of connective tissue noted here is not surprising since muscle fibers running in parallel fashion are damaged producing more damage longitudinally than transversely.

After thirty days the most striking finding was the presence of definite connective tissue proliferation. Few giant cells were present. There were individual small cells

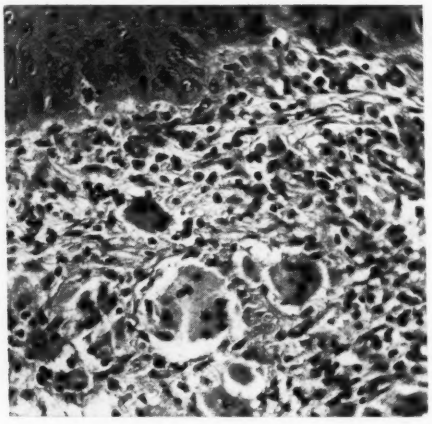


FIG. 2. Foreign body reaction due to escape of contents of sebaceous cyst.

with deeply staining cytoplasm. These were not definitely identified.

Suture materials in common use produce a certain amount of damage in insertion but soon there develops a foreign body reaction in which macrophages are present and also occasionally giant cells. Newly formed fibrous connective tissue is a constant finding. Other inflammatory cells usually in small numbers may be seen. Muscle giant cells are striking in their appearence and are frequently seen when suture is placed in muscle.

### FOREIGN BODIES IN HUMAN BEINGS

In human tissues the following examples of foreign bodies and the reaction to them were selected: injected oil, wooden splinter, talcum powder, suture material, sebaceous cyst content, necrotic fat, and gas.

Injected oil occasionally fails to be absorbed and remains as small pools and acts as foreign substances. Immediately surrounding the oily mass thus retained are cells of reticulo-endothelial type forming an incomplete syncitial lining with occasional multinucleated giant cells. The inflammatory reaction reveals varying amount of fibrosis and numbers of inflammatory cells, usually lymphocytes. Calcium may be deposited in the confined oily substance.

One example of a wooden splinter was encountered which, in its immediate vicinity,

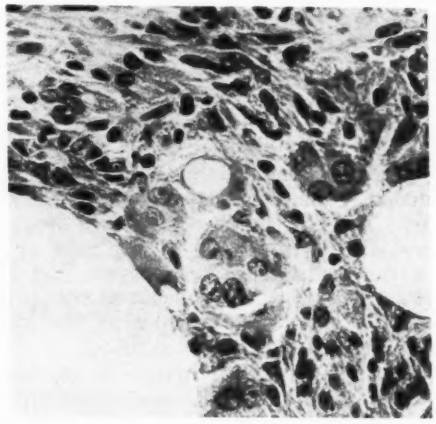


FIG. 3. Fat necrosis showing foreign body giant cells, macrophages, and fibroblasts.

appeared rather mild in its capacity to do damage, but a short distance from the wood a marked change was produced by the fortuitous proximity of a synovial cavity. A synovitis resulted, requiring surgical intervention.

Talc is well known to produce foreign body reaction in which giant cells are conspicuous. The attempt to engulf larger talc particles is remarkable as the foreign body giant cells are distorted in shape and show an arrangement of nuclei different from other giant cells which form around acicular crystals. Moderate fibrosis also results. Owen[3] was the first to bring to attention the granulomas caused by talc and a case was reported at a previous meeting of this society by one of us.[4]

Suture materials in the human being usually produce characteristics similar to those produced in animals, but most often they are brought to attention when their presence produces other changes such as ulceration of mucosa or sinus tracts. In one specimen sent to me the foreign body reaction due to cotton fibers left behind during an operation on the brain years previously produced a

particularly large number of giant cells as well as fibrous tissue proliferation.

Examples of substances produced by the body and acting as foreign bodies follow.

Sebaceous cysts may give rise to a striking foreign body reaction when the contents of the cyst escape into the tissues from their enclosing squamous cell lining. This is an unusual occurrence because of the lining epithelium which is almost always competent to hold the irritating contents within the confines of the cyst cavity. Because of trauma or for some other reason, disruption of the squamous cell lining can occur, spilling the irritating contents of the cyst into the tissues, and these may be identified loose in the adjacent tissue. There soon develops a striking foreign body reaction with foreign body giant cells being most conspicuous. Also present are lymphocytes and eosinophils. Mitotic figures can be demonstrated in the nuclei of the giant cells which engulf the escaped material, thus suggesting nuclear multiplication as a factor in the formation of multiple nuclei in the multinucleated giant cells.

In breast tissue, in subcutaneous tissue, or in the abdominal cavity the changes seen in fat necrosis are excellent examples of foreign body reaction. Macrophages are conspicuous and frequently contain fatty substances giving the well known foam appearance. Varying degrees of new connective tissue formation are noted and scattered inflammatory cells are observed. Of course, at times in pancreatic fat necrosis the picture is confused by the acute inflammatory reaction so frequently present and by the digestion which occurs as a result of the presence of escaped pancreatic enzymes.

Recently there was submitted to the pathology laboratory, by Dr. Herman L. Gardner, tissue from the cervix of the uterus in which cyst-like structures were present. These contained gas rather than liquid. Microscopic examination revealed different stages in the process. Multinucleated giant cells formed early and were of the foreign body type. Later these lined the cystic spaces in the tissues produced by gas. The larger and older cysts, which were apparently under greater pressure, possessed flattened syncitial type of cells. There was little other associated change and the gas rapidly disappeared after delivery. This could be considered as foreign body tissue reaction to gas.

## DISCUSSION

Foreign body tissue reaction reveals a continuing reaction in the presence of non-absorbable substances. There are present macrophages, fibrosis, giant cells, and other inflammatory cells, notably lymphocytes. However, plasma cells and eosinophils are also seen. These foreign body reactions lend themselves to the study of giant cell formation and also to the formation of fibrous connective tissue. The giant cells seen may be of more than one type. Haythorn[2] discussed the various types of giant cells and at least two types have been seen in this short study. In the reaction to sutures which were in voluntary muscle, many of the giant cells were produced not by cells of the reticuloendothelial system but by voluntary muscle cells with proliferation of the nuclei of the sheath. These nuclei occasionally are seen to assume a central location in the fiber when the fiber is damaged. Some of the giant muscle cells were large and possessed so much cytoplasm of peculiar staining properties that there is no doubt of their muscle origin. At times some of these are closely related in appearance to the ordinary for-

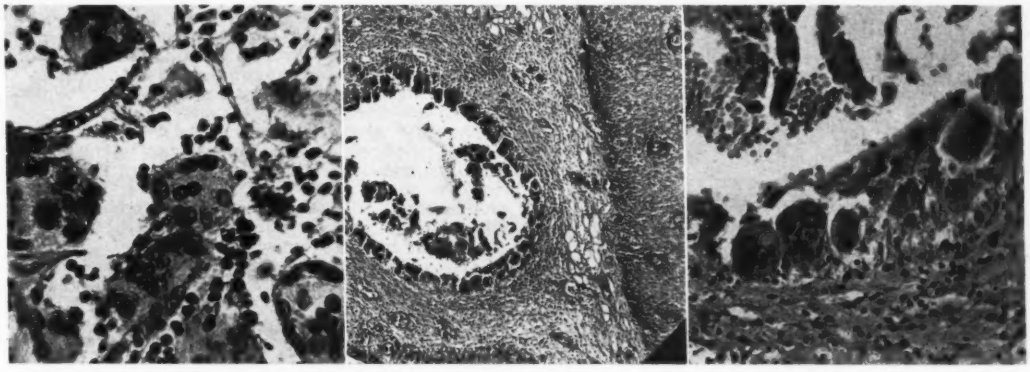


FIG. 4. Left. Giant cells in case of vaginitis emphysematosa. Center. Small cyst lined by giant cells in vaginitis emphysematosa. Right. Higher power of wall of cyst seen in center.

eign body giant cell. In regard to the formation of true foreign body giant cells, there has been uncertainty as to whether they form by fusion of several macrophage type of cells or whether one macrophage has had an increase in the amount of cytoplasm with multiplication of nuclei. The present concept, with which we concur, is that both occur. There is experimental proof that they do fuse, and there is evidence of nuclear division since mitotic figures occur in an occasional foreign body giant cell.

The ability of macrophages to transform into fibroblasts is not accepted by all, but in a morphologic study of this sort all variations between macrophage type of cells and fibrous connective tissue cells can be found.

Many other foreign body reactions have been described elsewhere. Sulfagranulomas, granulomas due to iodized poppyseed oil, granulomas due to intradermal typhoid vaccine, and others have been described. We have not attempted to include all the foreign body granulomas or to describe the findings in all the various sutures in this paper.

SUMMARY

A selected group of substances which produce foreign body reaction has been discussed.

Suture material in voluntary muscle of rabbits produces a striking foreign body reaction.

Foreign substances such as oils, talc, and sutures produce a foreign body reaction in human beings. Substances elaborated by the body such as sebaceous cyst contents, crystals, and gas, may also produce a foreign body reaction.

REFERENCES

1. Forbus, W. D.: Reaction to Injury; Pathology for Students of Disease Based on Functional and Morphological Responses of Tissues to Injurious Agents, Baltimore, Williams & Wilkins, 1943, p. 546.

2. Haythorn, S. R.: Multinucleated Giant Cells, with Particular Reference to Foreign Body Giant Cell, Arch. Path. 7: 651-713 (April) 1929.

3. Owen, M.: Peritoneal Response to Glove Powder, Texas State J. Med. 32:482-485 (Nov.) 1936.

4. Wallace, S. A.: Talc Granuloma, Texas State J. Med. 43:33-35 (May) 1947.

Dr. Wallace, Department of Pathology, Baylor University College of Medicine, Houston.
Major Brown, Eglin Field, Florida.

ABSTRACT OF DISCUSSION

**Dr. Paul Brindley,** Galveston: It is well to evaluate the tissue response not only to the trauma associated with suturing but also the tissue changes resulting from the long continued presence of such material within the living tissues. Dr. Wallace has brought such an evaluation for three forms of suture material. Some writers within the past few years have stated that nonabsorbable sutures are relatively less irritating than the absorbable types and that even certain fine metal wires are the least irritating.

Besides suture material Dr. Wallace has mentioned some of the other more common foreign body reactions. To his list might be added breasts where the walls of the ducts have been destroyed by inflammation with the duct contents getting into the adjoining tissue and causing a foreign body reaction. I have seen the leakage of the sebaceous material from an infected or inflamed dermoid cyst of the ovary producing a bizarre foreign body type of inflammatory reaction in the neighboring tissues. Also, there may be a long continued foreign body reaction in the peritoneal cavity after recovery from the immediate effects of the spilling of fecal material containing vegetable fibers and other insoluable substances into the cavity from perforation of an appendix or leakage from a diverticulum of the colon.

Years ago a relatively large proportion of the granulomatous types of inflammation with giant cells were of tuberculous or syphilitic origin. With better preventive medicine and the use of newer antibiotics pathologists are seeing a smaller number of such infectious granulomas and a higher percentage of so-called foreign body granulomas. It is well to keep this in mind and not mistakenly diagnose tuberculosis where the condition is a foreign body reaction. In examining tissue sections the simple matter of reducing the light will frequently reveal unsuspected foreign material.

Another point brought out by Dr. Wallace is worth emphasizing, and that is not to misinterpret the multinucleated cells of regenerating striated muscle for foreign body type giant cells. Such regeneration of muscle may be seen not only following trauma but after cancerocidal radiation of a neoplasm invading muscle.

Cases of emphysematous cystitis in diabetic patients are described but I have never seen gas cysts in the cervix.

---

FLUOROSCOPIC IMPROVEMENT

A new type amplifier which will increase the brightness of fluoroscopic x-ray images by 500 times was described at the September meeting of the American Roentgen Ray Society in Chicago by John W. Coltman of the Westinghouse Research Laboratories, East Pittsburgh, Pa. When perfected, the amplifier now being constructed in the Westinghouse laboratories will take the form of an attachment for standard fluoroscopic equipment.

The new amplifier increases the brightness of the fluoroscopic image after the roentgen rays have passed through the patient. While the intensity of the rays will be no greater as they touch the patient, the resultant image will be almost as bright as a movie screen and the physician will be able to perceive objects which at present are indiscernible.

---

CLUB FOOT TREATMENT

Treating club foot with a cohesive bandage gives most babies born with the deformity a normal foot, according to an article by Dr. Emil D. W. Hauser, Chicago, in the September 4 issue of *The Journal of the American Medical Association*. Results in 70 patients treated during a period of six years established the advantages of this type of treatment, Dr. Hauser writes. The bandage, which will not adhere to or irritate the skin, can be used immediately after birth, and the earlier treatment is begun, the better the correction that will be obtained. The entire foot and leg are covered with the cohesive bandage and a reinforcement of adhesive tape to hold the foot in as nearly a normal position as possible.

# THE TRANSLOCATION OF BODY FLUIDS IN CHRONIC DISEASE

ELLIOTT B. HAY, M. D.
HOUSTON, TEXAS

Because of recently published reports concerning significant changes of the body fluids in chronic disease,[4, 13, 20] a study of blood volumes and interstitial fluids was undertaken during the past year on patients and animals. Several types of disease were studied.

This preliminary report is based on the changes noted in 41 patients suffering from tuberculosis, cancer, or chronic sepsis. The results of these studies indicate that there is a general pattern of abnormal distribution of body fluids in these chronic diseases. This abnormality usually consists of a reduction in the blood volume and increase in the interstitial fluid.

The plasma volumes were determined with the Evans Blue Dye, T-1824,* as suggested by Gregersen[12] and modified by Gibson and Evans.[10] The extracellular fluids were determined by the sodium thyocyanate method of Gregersen and Stewart.[15] The interstitial fluids were calculated by subtracting the plasma volumes from the extracellular fluids. The hematocrits were determined by the method of Wintrobe,[22] and from the hematocrits and plasma volumes, the total blood volume and red cell mass were calculated. The albumin and globulin levels were determined by the method of Greenberg.[11]

In healthy adults, approximately 70 per cent of the body weight is water. Most of the body water (50 per cent by weight), is within the cells (intracellular fluid). About 20 per cent of the body weight is extracellular fluid. One fourth of the latter (5 per cent of the body weight) is plasma, while the other three fourths (15 per cent of the body weight) is between the plasma and cells (interstitial fluid). The body cells are bathed in, and receive their nourishment by the way of, the extracellular fluid.[9]

The various forces that affect the extracellular fluid changes are shown in figure 1. The effective hydrostatic pressure at the arterial end of the capillary is about 22 mm. of mercury. At the venous end of the capillary, the effective osmotic pressure is about 15 mm. of mercury. Thus the diffusible content of the plasma may be forced into the interstitial space by the hydrostatic pressure of the blood and returned by means of the osmotic pressure of the plasma proteins. The usual ratio between the plasma volume and interstitial fluid is 1:3. At the bottom of the illustration is shown the osmotic pressure of the blood electrolytes, represented as sodium chloride. The osmotic pressure of these electrolytes is about 2,500 mm. of mercury. This pressure is at least 100 times that of the effective osmotic pressure of the plasma, so that even minor imbalances of it may offset the plasma osmotic pull. This osmotic pressure of the electrolytes, however, is usually evenly distributed on the two sides of the capillary membrane, and it does not ordinarily cause fluid shifts. The exceptional circumstances in which it does exert an uneven force are salt-intolerance, a low blood protein, or peritonitis.

The first portion of table 1 summarizes studies on 4 patients with chronic sepsis. Case 1 had a ruptured diverticulum of the colon and generalized peritonitis. The plasma volume and red cell mass was about normal, but the interstitial fluid was slightly increased, the ratio between the plasma volume and interstitial fluid being 1:4.4. The serum albumin was lower than normal, and the globulin was slightly elevated.

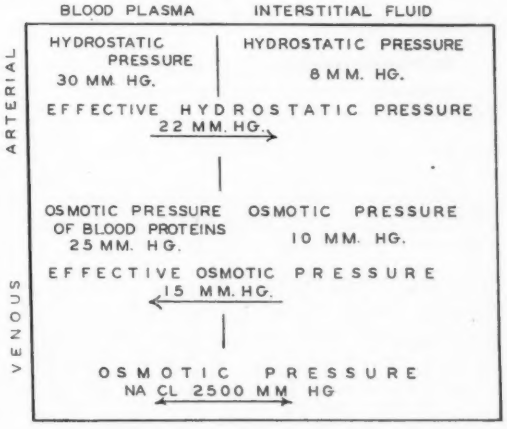



FIG. 1. Forces that affect extracellular fluid changes.

Case 2 had a chronic ulcerated colitis. The hematocrit was low, as was the albumin, plasma volume, and red cell mass. The interstitial fluid was markedly elevated. This man had only 1,200 cc. of packed blood cells. About 3,000 cc. of whole blood would be required to replace this deficit in the cell mass. One of the advantages of obtaining the plasma volume in these patients is that the total deficit in cell mass and the total deficit in plasma proteins can be calculated more accurately than by the usual laboratory methods. The other 2 patients with infection

From the Department of Surgery, Baylor University College of Medicine.

Read before the Section on Surgery, State Medical Association of Texas Annual Session, Houston, April 28, 1948.

*The blue dye, T-1824, was obtained from Dr. Marvin Thompson, Director of Research, Warner Institute of Therapeutic Research, New York.

in table 1 followed the same general pattern. Case 3 was a patient with chronic ulcerative colitis, and case 4 was a patient with a chronic gastric ulcer.

Similar findings in 5 patients with tuberculosis are shown in table 1. In general, the hematocrits were lower than normal, the plasma proteins were low, the plasma volumes were low, and the interstitial fluids were elevated. Case 6 had a red cell mass down to 930 cc. This is well below the normal standard of 2,400 cc. and it would require about 4,000 cc. of whole blood as replacement therapy before this patient would be a fit candidate for surgery. It should also be noted that the ratio between the plasma volume and interstitial fluid in all these patients was well above the normal of 1:3.

Table 1 also shows the blood studies of 5 patients with cancer. Case 10 had a cancer of the descending colon. It will be noted that the red cell mass was far below the normal

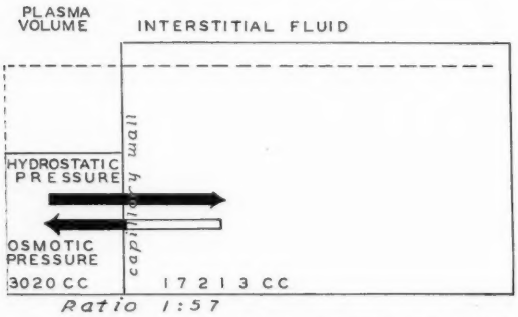



FIG. 2. Plasma volumes and interstitial fluids of 41 patients with chronic illness, superimposed on a diagram of the normal relationship of these fluids. The solid lines represent the fluids in illness; the dash lines in normalcy.

standard, and required large amounts of blood as replacement therapy. The rest of the patients with cancer followed somewhat the same general pattern. A great number of transfusions would be needed as replacement therapy for the low red cell mass. Most of these patients showed some increase in the plasma volume—interstitial fluid ratio. However, case 15, who had a carcinoma of the cervix with repeated profuse hemorrhages, had an extremely low red cell mass of 691 cc. This would require approximately 5 to 6 L. of blood to bring the red cells to the normal standard. An elevated serum albumin and lowered interstitial fluid were also found. Apparently this patient had an increased albumin and decreased interstitial fluid as a compensatory mechanism in an effort to maintain a blood volume depleted by hemorrhages. From the elevated serum albumin, one might think that this patient was dehydrated, if the total blood picture had not been obtained.

The plasma volumes and interstitial fluids of 41 patients with chronic illness, such as tuberculosis and cancer, are summarized in figure 2. They are superimposed on a diagram of the normal relationship of these fluids. The interstitial fluids were increased, and the plasma volumes were near normal. The interstitial fluids are nearly always ele-

TABLE 1.—*Summary of Study of Body Fluids in Chronically Ill Patients.*

| Disease | Case | Hematocrit % | Serum Albumin mg. | Globulin mg. | Plasma Volume cc. | Cell Mass cc. | Interstitial Fluid cc. | Ratio PV/IF* |
|---|---|---|---|---|---|---|---|---|
| Infection | 1 | 40 | 2.7 | 4.8 | 3,000 | 2,000 | 13,350 | 1/4.4 |
| | 2 | 30 | 3.9 | 3.1 | 2,080 | 1,200 | 20,340 | 1/9.7 |
| | 3 | 30 | 2.1 | 2.6 | 3,200 | 1,354 | 15,300 | 1/5 |
| | 4 | 36 | | | 2,880 | 1,620 | 11,720 | 1/4 |
| Tuberculosis | 5 | 25.2 | 1.7 | 4.1 | 3,472 | 1,190 | 23,028 | 1/6.6 |
| | 6 | 37.8 | 1.9 | 4.9 | 1,543 | 930 | 12,657 | 1/8.3 |
| | 7 | 37.8 | 2.2 | 4.2 | 2,560 | 1,552 | 19,640 | 1/7.6 |
| | 8 | 40.8 | 3.3 | 1.7 | 2,840 | 1,952 | 15,510 | 1/5.9 |
| | 9 | 31.8 | 2.4 | 4.7 | 2,970 | 1,358 | 15,630 | 1/5.2 |
| Cancer | 10 | 29 | 4 | 3.1 | 2,615 | 1,275 | 25,000 | 1/9.5 |
| | 11 | 36 | 3.6 | 3.5 | 2,500 | 1,410 | 16,750 | 1/6.6 |
| | 12 | 29 | 3.4 | 3.1 | 2,700 | 1,100 | 11,800 | 1/4.3 |
| | 13 | 29 | 3.6 | 2.4 | 3,300 | 1,309 | 10,200 | 1/3 |
| | 14 | 36 | 3.5 | 2.5 | 2,900 | 1,606 | 10,400 | 1/3.5 |
| | 15 | 18 | 6.2 | 3.1 | 3,150 | 691 | 9,159 | 1/2.9 |

*Ratio of plasma volume/interstitial fluid.

vated, but the plasma volumes may be greater or less than normal in chronic illness. It is for this reason that the red blood cell count and hemoglobin may give a false sense of security. The probable cause of this fluid shift is shown by the arrows. The hydrostatic pressure is seen to remain about the same in chronic disease. The osmotic pressure of the blood, as shown by the shortened arrow, is lowered from depleted blood albumin and depleted red cells, so that there is a tendency for the fluids to be retained in the interstitial space. In these 41 patients, the average ratio between the plasma and interstitial fluids was 1:5.7.

The relationship of the total blood volume in normal patients and the previously described series of patients with chronic disease is shown in figure 3. There was a reduction in the total circulating blood volume in these patients, and the main deficit apparently was in the red cell mass. The average deficit in the red cell mass was 700 cc. This would require about 1,500 to 2,000 cc. of whole blood as replacement therapy.

A comparison between the blood albumin and globulin levels in health and in chronic disease is shown in figure 4. The plasma proteins were reduced, and the main deficit was in the plasma albumin. As the plasma albumin exerts by far the most osmotic pressure, it is easily understood why patients with chronic disease have an increased tendency for fluids to remain in the interstitial spaces.

Table 2 compares the usual laboratory tests with the blood volume and interstitial fluid during severe illness and after recovery. The hemoglobin and red blood cell count do not reflect the marked deficit in circulating cells

TABLE 2.—*Laboratory Tests Showing Correction of Fluid Shift in a Case of Ulcerative Colitis in Which Hemorrhage Was Controlled by Surgery.*

| | 10-27-47 | 3-20-48 |
|---|---|---|
| Red blood cell count | 4,400 | 4,600 |
| Hemoglobin | 11.5 Gm. | 16 Gm. |
| Hematocrit | 30% | 44% |
| Plasma volume | 2,080 cc. | 4,170 cc. |
| Cell mass | 890 cc. | 3,280 cc. |
| Total blood volume | 2,970 cc. | 7,450 cc. |
| Interstitial fluid | 20,340 cc. | 11,890 cc. |
| Plasma volume/interstitial fluid | 1/7 | 1/2.8 |

that existed on admission. The hematocrit does reflect the condition more closely, but only the plasma volume and red cell mass reflect the true condition. Even considering that this method of estimating the blood volume may have a 10 per cent error,[14, 19] the

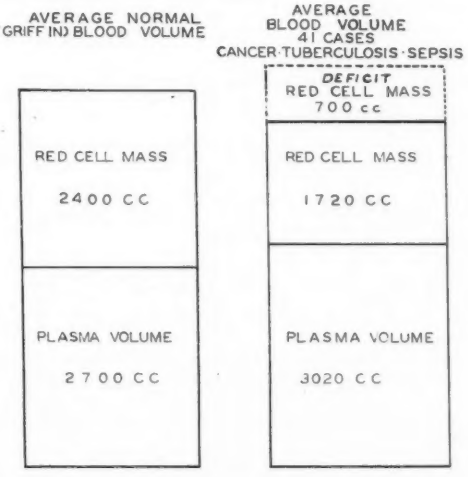

AVERAGE NORMAL (GRIFFIN) BLOOD VOLUME
AVERAGE BLOOD VOLUME 41 CASES CANCER·TUBERCULOSIS·SEPSIS
DEFICIT RED CELL MASS 700 cc
RED CELL MASS 2400 CC
PLASMA VOLUME 2700 CC
RED CELL MASS 1720 CC
PLASMA VOLUME 3020 CC

FIG. 3. The relationship of total blood volume in normal patients and in 41 patients with chronic illness.

red blood count and hemoglobin may be several hundred per cent inaccurate.

Tests for the plasma volume and hematocrit are simple procedures and can be done in any hospital laboratory. Although the interstitial fluids are interesting, and some standard of comparison is afforded by their values, their determination is more difficult and not necessary. However, as the several chronic diseases studied all showed similar alterations—low blood volume, low serum proteins, and increase in the interstitial fluid—it can be assumed that they will usually show this phenomenon. A good estimate of the patient's condition can be obtained from knowledge of the duration and type of disease, the amount of weight loss, loss of skin turgor, and degree of muscular atrophy. Laboratory procedures will never substitute for careful clinical evaluation.

One of the initiating factors in shock from hemorrhage and trauma is a reduction in blood volume. It is easily conceivable that any surgical procedures performed on a patient with a low blood volume may cause shock as these patients are more susceptible to shock.

The fluid derangement associated with salt block or salt intolerance resembles the fluid

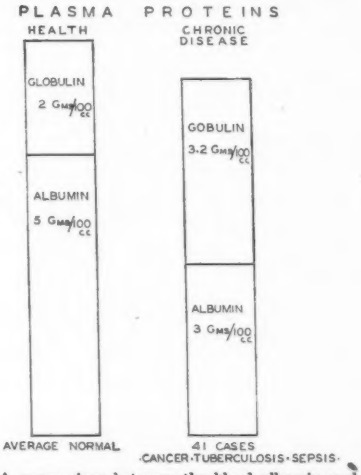



FIG. 4. A comparison between the blood albumin and globulin levels in normal patients and in 41 patients with chronic disease.

shift associated with chronic disease. Clinically, these patients are more susceptible to this syndrome. Their failure properly to metabolize or excrete sodium chloride has been repeatedly emphasized.[2, 3, 5-8, 16-18, 21] For these reasons, every effort should be made to correct the low blood volume, decreased plasma protein, and increased interstitial fluid. I have found that the best way to accomplish this is by frequent transfusions of whole blood.

## SUMMARY AND CONCLUSIONS

The body fluid shifts in patients with chronic illnesses, such as tuberculosis, cancer, and chronic sepsis, have been shown in 41 cases. From the data presented, it is suggested that correction of these deficiencies before surgery would be highly desirable. As most of this deficit is in the red cells, multiple transfusion is the ideal therapy. The method used, T-1824 dye and hematocrit, of estimating the blood volume is practical enough to be used routinely. These procedures are suggested for use in conjunction with, not instead of, a careful history and physical examination.

REFERENCES

1. Abbott, W. E.: Review of Present Concepts on Fluid Balance, Am. J. M. Sc. 211:232-239 (Feb.) 1946.
2. Abbott, W. E.: Fluid Electrolyte and Nutritional Problems in Surgery, S. Clin. North America 26:1330-1360 (Dec.) 1946.
3. Abbott, W. E., and Mellors, R. C.: Total Circulating Plasma Proteins in Surgical Patients with Dehydration and Malnutrition, Indications for Intravenous Alimentation with Amino Acids, Arch. Surg. 46:277-288 (Feb.) 1943.
4. Clark, J. H., and others: Chronic Shock, Problem of Reduced Blood Volume in Chronically Ill Patient, Concept of Chronic Shock, Hemoglobin and Red Blood Cell Deficits in Chronic Shock, Quantitative Aspects of Anemia Associated with Malignant Tumor, Ann. Surg. 125:618-646 (May) 1947.
5. Coller, F. A.; Iob, V.; Vaughn, H. F.; Kalder, N. B.; and Meyer, C. A.: Translocation of Fluid Produced by Intravenous Administration of Isotonic Salt Solutions in Man Postoperatively, Ann. Surg. 122:663-677 (Oct.) 1945.
6. Coller, F. A., and Maddock, W. G.: Water and Electrolyte Balance, Surg., Gynec. & Obst. 70:340-354 (Feb.) No. 2A, 1940.
7. Coller, F. A., and others: Postoperative Salt Intolerance, Ann. Surg. 119:533-542 (April) 1944.
8. Evans, G. H.: Abuse of Normal Salt Solution, J.A.M.A. 57:2126-2127 (Dec. 30) 1911.
9. Gamble, J. L.: Chemical Anatomy, Physiology, and Pathology of Extracellular Fluid (Lecture Syllabus), Harvard Medical School, Boston, Spaulding-Moss Co., 1941.
10. Gibson, J. G., Jr., and Evans, W. A., Jr.: Clinical Studies of Blood Volume, Clinical Application of Method Employing Azo Dye "Evans Blue" and Spectrophotometer, J. Clin. Investigation 16:301-316 (May) 1937.
11. Greenberg, D. M.: Colorimetric Determination of Serum Proteins, J. Biol. Chem. 82:545-550 (May) 1929.
12. Gregersen, M. I.: Practical Method for Determination of Blood Volume with Dye T-1824, Survey of Present Basis of Dye-Method and Its Clinical Applications, J. Lab. and Clin. Med. 29:1266-1286 (Dec.) 1944.
13. Gregersen, M. I.: Symposium on Physiological Contributions to War Problems, Physiological Contribution to Problems of Shock, Federation Proc. 5:354-361 (Sept.) 1946.
14. Gregersen, M. I.; Gibson, J. J.; and Stead, E. A.: Plasma Volume Determination with Dyes, Errors in Colorimetry, Use of Blue Dye T-1824, Am. J. Physiol. 113:54-55 (Sept.) 1945.
15. Gregersen, M. I., and Stewart, J. D.: Simultaneous Determination of Plasma Volume with T-1824 and "Available Fluid" Volume with Sodium Thiocyanate, Am. J. Physiol. 125: 142-152 (Jan.) 1939.
16. Marriott, W. McK.: Anhydremia, Physiological Rev. 3: 275-294 (April) 1923.
17. Matas, R.: Continued Intravenous "Drip" with Remarks on Value of Continued Gastric Drainage and Irrigation by Nasal Intubation with Gastroduodenal Tube (Jette) in Surgical Practice, Ann. Surg. 79:643-661 (May) 1924.
18. Rawdin, I. S.; Royster, H. P.; Riegel, C.; and Rhoads, J. E.: Surgical Care of Patients with Gastric Cancer before and after Operation, Arch. Surg. 46:871-878 (June) 1943.
19. Root, W. S.; Roughton, F. J. W.; and Gregersen, M. I.: Simultaneous Determination of Blood Volume by C. O. and Dye (T-1824) under Various Conditions, Am. J. Physiol. 146:739-755 (Aug.) 1946.
20. Selye, H.: General Adaptation Syndrome and Diseases of Adaptation, J. Clin. Endocrinol. 6:117-230 (Feb.) 1946.
21. Trout, H. H.: Proctolysis, Experimental Study, Surg., Gynec. & Obst. 16:560-562 (May) 1913.
22. Wintrobe, M. M.: Macroscopic Examination of Blood, Discussion of Its Value and Description of Use of Single Instrument for Determination of Sedimentation Rate, Volume of Packed Red Cells, Leukocytes and Platelets and of Icterus Index, Am. J. M. Sc. 185:58-71 (Jan.) 1933.

## ABSTRACT OF DISCUSSION

**Dr. Frank H. Kidd, Jr.,** Dallas: The presentation of such a paper as this at a meeting of the State Medical Association is an indication that Texans are keeping abreast of the newer developments in surgery. Dr. Hay is to be congratulated upon the preparation and presentation of this work. Through such a study as this more light is being shed on the true distribution of fluids and the part they play in the outcome of the more complex surgical cases. In other words, this is one method of decreasing surgical risk. Dr. Hay's work is certainly in conformity with that of other investigators.

I am certainly in accord with the thought that if by the method outlined the total blood volume can be found and from it blood deficits can be estimated, this would be a desirable routine procedure. I doubt if the examinations can be done in our present laboratories without expansion of facilities. The determinations require skilled technicians and they are time consuming.

It has again been pointed out that many patients need more blood. Undoubtedly this is true. Physicians will probably use more blood in the future. They must not, however, forget that the establishment of numerous blood banks will bring with them many complicating factors in addition to making blood readily available.

# MISCELLANEOUS

## COMING MEETINGS AND CLINICS

State Medical Association of Texas, San Antonio, May 2-5, 1949. Dr. Tate Miller, Dallas, President; Dr. Harold M. Williams, 700 Guadalupe St., Austin, Secretary.

American Medical Association. Interim Session, St. Louis, November 30-December 3, 1948. Dr. R. L. Sensenich, South Bend, Ind., President; Dr. George F. Lull, 535 North Dearborn St., Chicago 10, Secretary.

NATIONAL AND REGIONAL

American Academy of Allergy. Dr. Will C. Sprain, New York, President; Dr. Theodore L. Squier, 424 East Wisconsin Ave., Milwaukee, Secretary.

American Academy of Dermatology and Syphilology. Dr. Clyde L. Cummer, Cleveland, President; Dr. Earl D. Osborne, 471 Delaware Ave., Buffalo, N. Y., Secretary.

American Academy of General Practice, Cincinnati, March 7-9, 1949. Dr. Paul A. Davis, Akron, Ohio, President; Dr. Mac F. Cahal, 20 N. Wacker Drive, Chicago 6, Acting Executive Secretary.

American Academy of Neurological Surgery. Dr. William S. Keith, Toronto, Canada, President; Dr. T. C. Erickson, 1300 University Ave., Madison 5, Wis., Secretary.

American Academy of Ophthalmology and Otolaryngology, Chicago, October 10-15, 1948. Dr. C. H. McCaskey, Indianapolis, President; Dr. W. L. Benedict, Mayo Clinic, Rochester, Minn., Secretary.

American Academy of Pediatrics, Atlantic City, November 20-23, 1948. Dr. John A. Toomey, Cleveland, President; Dr. C. G. Grulee, 636 Church St., Evanston, Ill., Secretary.

American Association for Thoracic Surgery. Dr. Alton Ochsner, New Orleans, President; Dr. Brian Blades, George Washington University School of Medicine, Washington, D. C., Secretary.

American Association of Genito-Urinary Surgeons. Dr. C. E. Burford, St. Louis, President: Dr. Norris J. Heckel, 122 S. Michigan Ave., Chicago, Secretary.

American Association of Obstetricians, Gynecologists, and Abdominal Surgeons. Dr. Robert D. Mussey, Rochester, Minn., President; Dr. L. A. Calkins, University of Kansas Medical Center, Kansas City 3, Secretary.

American College of Physicians, New York, March 28-April 1, 1949. Dr. Walter W. Palmer, New York, President; Mr. E. R. Loveland, 4200 Pine St., Philadelphia 4, Secretary.

American College of Radiology, Dr. Edwin C. Ernst, St. Louis, President; Dr. Mac F. Cahal, 20 N. Wacker Drive, Chicago 6, Secretary.

American College of Surgeons, Los Angeles, October 18-22, 1948. Dr. Arthur W. Allen, Boston, President; Dr. Paul B. Magnuson, 40 E. Erie St., Chicago 11, Secretary.

American Congress of Physical Medicine. Dr. H. Worley Kendell, Chicago, President; Dr. Richard Kovacs, 2 E. 88th St., New York 28, Secretary.

American Dermatological Association. Dr. Harry R. Foerster, Milwaukee, President; Dr. L. A. Brunsting, 102 2nd. Ave., S. W., Rochester, Minn., Secretary.

American Gastro-Enterological Association, Atlantic City, June 3-4, 1949. Dr. A. F. R. Andresen, Brooklyn, President; Dr. Dwight L. Wilbur, 655 Sutter St., San Francisco, Secretary.

American Gynecological Society. Dr. Edmund A. Schumann, Philadelphia, President; Dr. Howard Taylor, Jr., 842 Park Ave., New York 21, Secretary.

American Hospital Association. Mr .Graham L. Davis, Battle Creek, Mich., President; Mr. George P. Bugbee, 18 E. Division St., Chicago, Executive Secretary.

American Laryngological, Rhinological and Otological Society, Chicago, April, 1949. Dr. John J. Shea, Memphis, Tenn., President; Dr. C. S. Nash, 277 Alexander St., Rochester 7, N. Y., Secretary.

American Neurological Association. Dr. Stanley Cobb, Boston, President; Dr. H. Houston Merritt, 710 W. 168th St., New York 32, Secretary.

American Ophthalmological Society. Dr. Henry C. Haden, Houston, President; Dr. W. S. Atkinson, 129 Clinton St., Watertown, N. Y., Secretary.

American Orthopedic Association. Dr. Robert I. Harris, Toronto, Canada, President; Dr. C. Leslie Mitchell, Henry Ford Hospital, Detroit 2, Secretary.

American Otological Society. Dr. Marvin F. Jones, New York, President; Dr. Gordon D. Hoople, 713 E. Genesee St., Syracuse 3, N. Y., Secretary.

American Pediatric Society. Dr. Grover F. Powers, New Haven, Conn., President; Dr. Henry G. Poncher, 1819 W. Polk St., Chicago 12, Secretary.

American Proctologic Society. Dr. George H. Thiele, Kansas City, Mo., President; Dr. Vernon G. Jeurink, 1612 Tremont Pl., Denver 2, Secretary.

American Psychiatric Association. Dr. Winfred Overholser, Washington, D. C., President; Dr. Leo H. Bartemeier, General Motors Bldg., Detroit, Secretary.

American Public Health Association, Boston, November 8-12, 1948. Dr. Martha M. Eliot, Washington, D. C., President; Dr. R. M. Atwater, 1790 Broadway, New York 19, Secretary.

American Roentgen Ray Society. Dr. J. B. Edwards, St. Louis, President; Dr. H. Dabney Kerr, University Hospital, Iowa City, Secretary.

American Society of Anesthesiologists, St. Louis, November 4-6, 1948. Dr. Charles F. McCuskey, Los Angeles, President; Dr. Curtiss B. Hickcox, 745 Fifth Ave., New York 22, Secretary.

American Society of Clinical Pathologists, Chicago, October 10-16, 1948. Dr. Theodore J. Curphey, Hempstead, N. Y., President; Dr. A. S. Giordano, 531 N. Main St., South Bend, Ind., Secretary.

American Surgical Association. Dr. Elliott C. Cutler, Boston, President; Dr. W. M. Firor, Johns Hopkins Hospital, Baltimore 5, Secretary.

American Urological Association, Los Angeles, May 16-19, 1949. Dr. Charles C. Higgins, Cleveland, President; Dr. T. D. Moore, 899 Madison Ave., Memphis 3, Tenn., Secretary.

Association of American Physicians, Atlantic City, May 3-4, 1949. Dr. Francis G. Blake, New Haven, President; Dr. H. M. Thomas, Jr., 1201 N. Calvert St., Baltimore 2, Secretary.

Central Neuropsychiatric Association, Kansas City, October 29-30, 1948. Dr. William C. Menninger, Topeka, Kan., President; Dr. Lee Eaton, Mayo Clinic, Rochester, Minn., Secretary.

International College of Surgeons, U. S. Chapter, St. Louis, November 15-20, 1948. Dr. Herbert Acuff, Knoxville, Tenn., President; Dr. Louis J. Gariepy, 16401 Grand River Ave., Detroit 27, Secretary.

National Tuberculosis Association, Dr. Herbert L. Manz, Kansas City, Mo., President; Dr. H. Stuart Willis, 1790 Broadway, New York 19, Secretary.

Radiological Society of North America. Dr. L. Henry Garland, San Francisco, President; Dr. D. S. Childs, Medical Arts Bldg., Syracuse 2, N. Y., Secretary.

Southern Psychiatric Association, Dallas, December 6-7, 1948. Dr. Guy F. Witt, Dallas, President; Dr. Newdigate M. Owensby, 384 Peachtree St. N. E., Atlanta, Ga., Secretary.

Southern Surgical Association, White Sulphur Springs, December 7-9, 1948. Dr. E. P. Lehmann, Charlottesville, Va., President; Dr. Alfred Blalock, Johns Hopkins Hospital, Baltimore 5, Secretary.

Southwest Allergy Forum, El Paso, April 4-5, 1949. Dr. Sim Hulsey, Fort Worth, President; Dr. O. E. Egbert, First National Bank Bldg., El Paso, Secretary.

Southwestern Medical Association, El Paso, October 28-30, 1948. Dr. Leslie M. Smith, El Paso, President; Dr. Wickliffe R. Curtis, First National Bank Building, El Paso, Secretary.

Southwest Regional Cancer Conference, Fort Worth, October 12, 1948. Secretary, 209 Medical Arts Bldg., Fort Worth.

United States-Mexico Border Public Health Association, Nogales, Ariz., and Nogales, Mexico, 1949. Dr. Victor Ocampo Alonzo, Hermosillo, Mexico, President; Dr. M. F. Haralson, 314 U. S. Court House, El Paso, Secretary.

STATE

Texas Association of Obstetricians and Gynecologists, Houston, October 15-16, 1948. Dr. Warren E. Massey, Dallas, President; Dr. George Adam, 4115 Fannin, Houston, Secretary.

Texas Chapter, American Academy of General Practice. Dr. J. B. Copeland, San Antonio, President; Dr. W. P. Higgins, Jr., Medical Arts Bldg., Fort Worth, Secretary.

Texas Chapter, American College of Chest Physicians. Dr. Robert B. Homan, El Paso, President; Dr. Charles J. Koerth, Kerrville, Secretary.

Texas Club of Internists. Dr. Julian C. Barton, San Antonio, President; Dr. Charles Barrier, Medical Arts Building, Fort Worth, Secretary.

Texas Dermatological Society, Beaumont, October 3, 1948. Dr. D. T. Gandy, Houston, President; Dr. W. Harris Connor, 601 Medical Arts Bldg., Houston, Secretary.

Texas Heart Association. Dr. Walter B. Whiting, Wichita Falls, President; Dr. Merritt B. Whitten, 1421 Medical Arts Bldg., Dallas, Secretary.

Texas Hospital Association, Galveston, April 19-21, 1949. Mr. C. J. Hollingsworth, Lubbock, President; Mrs. Ruth Barnhart, 2210 Main St., Dallas, Secretary.

Texas Neuropsychiatric Association, Waco, October 25, 1948. Dr. M. J. Cooper, San Antonio, President; Dr. David Wade, 604 Capital National Bank Bldg., Austin, Secretary.

Texas Orthopedic Association, San Antonio, May 2, 1949. Dr. Ruth Jackson, Dallas, President; Dr. Margaret Watkins, 3629 Fairmount St., Dallas, Secretary.

Texas Pediatric Society, Dallas, October 15-16, 1948. Dr. C. B. Alexander, San Antonio, President; Dr. John E. Ashby, 3610 Fairmount, Dallas, Secretary.

Texas Public Health Association, San Antonio, February, 1949. Dr. Austin E. Hill, San Antonio, President; Mr. Earle W. Sudderth, Dallas County Health Department, Court House, Dallas, Executive Secretary.

Texas Radiological Society, Fort Worth, January 7-8, 1949. Dr. L. M. Garrett, Corpus Christi, President; Dr. R. P. O'Bannon, 650 Fifth Ave., Fort Worth, Secretary.

Texas Railway and Traumatic Surgical Association, San Antonio, May 2, 1949. Dr. Denman C. Hucherson, Houston, President; Dr. W. F. Parsons, First National Bank Bldg., Fort Worth, Secretary.

Texas Rheumatism Association. Dr. Howard C. Coggeshall, Dallas, President; Dr. J. Paul Thomas, Medical Arts Bldg., Dallas, Secretary.

Texas Society for Mental Hygiene, Dallas, March 3-5, 1949. Dr. Ozro T. Woods, Dallas, President; Mrs. Elizabeth F. Gardner, 1617 Watchhill Road, Austin 21, Executive Secretary.

Texas Society of Anesthesiologists. Dr. J. C. Youngblood, Houston, President; Dr. H. C. Slocum, 928 Strand, Galveston, Secretary.

Texas Society of Gastroenterologists and Proctologists, San Antonio, May 2, 1949. Dr. Alvin Baldwin, Dallas, President; Dr. Carl Giesecke, 1602 Nix Professional Bldg., San Antonio, Secretary.

Texas Society of Ophthalmology and Otolaryngology, Fort Worth, December 3-4, 1948. Dr. S. N. Key, Sr., Austin, President; Dr. John L. Matthews, 929 Nix Professional Bldg., San Antonio, Secretary.

Texas Society of Pathologists, Dallas, January 30, 1949. Dr. W. W. Coulter, Sr., Houston, President; Dr. C. T. Ashworth, 604 Medical Arts Bldg., Fort Worth, Secretary.

Texas State Urological Society, Temple. Dr. Michael K. O'Heeron, Houston, President; Dr. E. O. Bradfield, Scott and White Clinic, Temple, Secretary.

Texas Surgical Society, Fort Worth, October 4-5, 1948. Dr. G. W. N. Eggers, Galveston, President; Dr. Truman G. Blocker, University of Texas Medical Branch, Galveston, Secretary.

Texas Tuberculosis Association. Dr. Elliott Mendenhall, Dallas, President; Miss Pansy Nichols, 700 Brazos, Austin, Executive Secretary.

DISTRICT

Second District Society, Lubbock, October 5-6, 1948. Dr. R. B. G. Cowper, Big Spring, President; Dr. Carl Uthoff, Big Spring, Secretary.

Third District Society, Lubbock, October 5-6, 1948. Dr. C. E. High, Pampa, President; Dr. Kenneth Flamm, Amarillo, Secretary.

Fourth District Society, Ballinger, October 12, 1948. Dr. J. C. Young, Coleman, President; Dr. Charles F. Bailey, Ballinger, Secretary.

Fifth and Sixth Districts Society, Corpus Christi, July, 1949. Dr. D. R. Knapp, Kerrville, President; Dr. Charles Tennison, Nix Professional Building, San Antonio, Secretary.

Seventh District Society. Dr. David Wade, Austin, President; Dr. Joe W. Bailey, 1411 San Antonio St., Austin, Secretary.

Eighth, Ninth and Tenth Districts Society. Dr. T. O. Woolley, Orange, President; Dr. James Greenwood, Jr., 518 Medical Arts Bldg., Houston 2, Secretary.

Eleventh District Society, Tyler, October 22, 1948. Dr. Harvey Bell, Palestine, President; Dr. C. B. Young, 929 S. Confederate, Tyler, Secretary.

Twelfth District Society. Dr. R. R. White, Temple, President; Dr. H. F. Connally, Jr., Amicable Bldg., Waco, Secretary.

Thirteenth District Society, Mineral Wells, November 11-12, 1948. Dr. Fred Harrell, Olney, President; Dr. S. W. Wilson, Medical Arts Bldg., Fort Worth, Secretary.

Fourteenth District Society, Ennis, January, 1949. Dr. W. I. Southerland, Sherman, President; Dr. John Bagwell, Medical Arts Building, Dallas, Secretary.

Fifteenth District Society, Daingerfield, October 19, 1948. Dr. W. S. Terry, Jefferson, President; Dr. James Harris, Marshall, Secretary.

CLINICS

Dallas Southern Clinical Society, Dallas, March 14-17, 1949. Miss Thelma J. Webb, Medical Arts Bldg., Dallas 1, Executive Secretary.

International Post-Graduate Medical Assembly of Southwest Texas, San Antonio, January 25-27, 1949. Dr. John J. Hinchey, 643 Moore Bldg., San Antonio 5, Secretary.

North Texas-Southern Oklahoma Fall Clinical Conference, Wichita Falls, October 20, 1948. Dr. Charles H. Brown, Wichita Falls, Program Chairman.

Oklahoma City Clinical Society Conference, Oklahoma City, October 25-28, 1948. Muriel R. Waller, 512 Medical Arts Bldg., Oklahoma City 2, Executive Secretary.

Post Graduate Medical Assembly of South Texas, Houston, December 7-9, 1948. Dr. E. Trowbridge Wolf, 229 Medical Arts Bldg., Houston, Secretary.

## A.M.A. REGIONAL CONFERENCE

The Council on Medical Service of the American Medical Association will sponsor a South Central Regional Conference at the Mayo Hotel, Tulsa, Okla., November 13-14. Dr. James R. McVay, Kansas City, chairman of the council, will be conference chairman, and physicians of the states of Arkansas, Kansas, Louisiana, Missouri, Oklahoma, and Texas have been invited to participate, both as leaders and as registrants.

Dr. George A. Schenewerk, Dallas, and Dr. Allen T. Stewart, Lubbock, will moderate a round-table discussion and a symposium, respectively, and Dr. William M. Gambrell, Austin, and Dr. Stewart will participate in discussions.

A round-table discussion of the functions of the A.M.A. and the Council on Medical Service and the services which they might reasonably render to the state and county medical societies and their member physicians; a consideration of the medical aspects of the next national emergency; a round-table discussion of the medical school influence on the practice of medicine, hospital encroachment on the practice of medicine, the National Health Assembly, and other present day problems; and a symposium and open discussion on local health units and councils, the cooperative hospital, and rural medical care will fill the allotted period for the conference.

Each member of the State Medical Association is invited to attend the meeting in Tulsa.

## MILITARY SURGEONS TO MEET

The fifty-fifth annual convention of the Association of Military Surgeons will be held November 11-13 in San Antonio, and members of the State Medical Association have been given a special invitation to attend by Brigadier General J. I. Martin, M.C., U.S.A., Brooke Army Medical Center, Fort Sam Houston, general chairman of arrangements. Registration and most of the program will take place in the Gunter Hotel. No registration fee will be charged, but physicians in attendance will be expected to pay the cost of meals and other entertainment.

Major General Raymond W. Bliss, surgeon general of the Army; Rear Admiral C. A. Swanson, surgeon general of the Navy; Major General Malcolm C. Grow, air surgeon of the Air Force; Major General C. L. Williams, assistant surgeon general of the U. S. Public Health Service; and Col. Arden Freer, deputy medical director of the Veterans Administration, as well as numerous other military officers of high rank from throughout the nation will participate in the program. Officers stationed at military establishments in Texas, and Texas physicians both with and without official military status will assist in rounding out the program. Scientific exhibits representing all the governmental medical services, the three medical schools in Texas, and outstanding practitioners will be on display at Fort Sam Houston.

Group panel discussions on Friday afternoon will feature aviation medicine, recent advances in the treatment of tuberculosis, the educational program of the Army Nurse Corps, problems in the Medical Service Corps, public health aspects of food sanitation, and problems in medicine and in surgery. The general sessions will offer subjects of general interest as well as those of special concern to military medical officers.

Tours of the city and other entertainment are being planned for visiting ladies.

## MEDICAL OFFICERS NEEDED

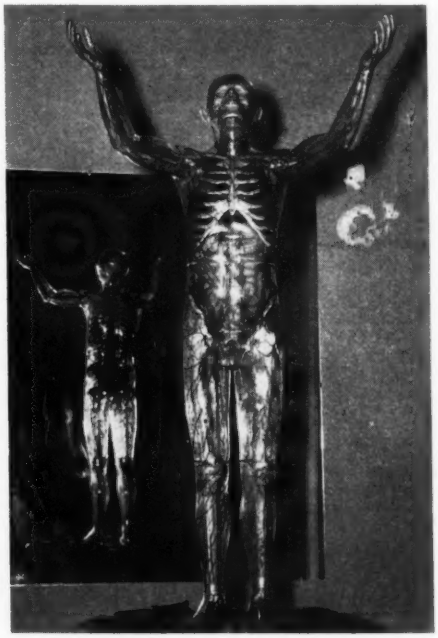
An examination has been announced by the U. S. Civil Service Commission for filling Medical Officer positions at salaries ranging from $4,479 to $6,235 a year. The positions are located in Washington, D. C., throughout the United States, and in the Panama Canal Zone, in such agencies as the Indian Service, Panama Canal Service, U. S. Public Health Service, Department of the Army, Veterans Administration, Civil Aeronautics Administration, and the Railroad Retirement Board.

Information and application forms may be secured at most first and second-class post offices, from Civil Service regional offices, or from the U. S. Civil Service Commission, Washington 25, D. C.

## "TRANSPARENT MAN" IN DALLAS

Formal acceptance of the Oberlander Collection of health education exhibits loaned by the American Museum of Health, New York, was the feature of the second annual meeting of the directors of the Dallas Health Museum on September 19. In a brief ceremony, the "Transparent Man," most important exhibit in the group, was dedicated and placed on public exhibition. Built in Germany in 1930 at a cost of $25,000 for showing at the German Hygiene Museum, Dresden, the exhibit was brought to the United States for display at the New York World's Fair in 1939.

More than fifty exhibits collected by the Oberlander Trust and Foundation, Philadelphia, for showing at the New York World's Fair, which have been on display at the Cleveland Health Museum for the past several years, have recently been transferred to the Dallas Health Museum through the generosity of the owner, the American Museum of Health. Although loaned especially for showing during the period of the State Fair of Texas, October 9-24, the exhibits will probably be in Dallas for at least a year.



The "Transparent Man" now on exhibit at the Dallas Health Museum, Fair Park, Dallas. This display is part of the Oberlander Collection of health education exhibits of the American Museum of Health on loan for an indefinite period to the Dallas museum.

Other business of the directors included election of officers. Travis T. Wallace was elected president, replacing R. L. Thomas, who was made treasurer. Harold F. Boss, vice-president and chairman of the executive committee, and Dr. M. O. Rouse, secretary, were reelected. New trustees elected include Dr. Tom Smith, Frank Schultz, D.D.S., John Henry, Paul Lindsey, Ben Wooten, Harold H. Wineburgh, Lewis B. Lefkowitz, and Mrs. W. F. Waters.

## TEXAS TUBERCULOSIS ASSOCIATION

Dr. Elliott Mendenhall, Dallas, was elected president of the Texas Tuberculosis Association at its thirty-eighth annual meeting September 24-25 in San Angelo. Dr. David McCullough, Kerrville, was named first vice-president; Dr. R. G. McCorkle, San Antonio, second vice-president; J. W. Butler, Texas City, secretary; and Dr. Z. T. Scott, Austin, treasurer. The executive committee includes the officers and Dr. C. M. Hendricks, El Paso; F. K. Dougharty, Liberty, the outgoing president; Mrs. R. H. Traylor, Laredo; Dr. J. Edward Johnson, Austin, and Dr. James E. Dailey, Houston.

Dr. W. M. Brumby, Houston, founder and first president of the association, and Dr. J. B. McKnight, superintendent of the State Sanatorium, Sanatorium, were named honorary vice-presidents.

Dr. Harold M. Williams, Austin, Secretary of the State Medical Association, and J. J. Brown, Austin, director of the Rehabilitation Division, State Board for Vocational Education, were named directors-at-large for three year terms, and the following representatives of local tuberculosis associations will serve on the board for similar terms: Mrs. W. P. Brightwell, Baird; Mrs. C. C. Lockwood, Brownwood; Mrs. M. V. Rumley, Clute; Mrs. W. T. Adams, Denison; Dr. T. S. Myrick, Muenster; Dr. Jack A. Bergfeld, New Braunfels; the Rev. C. A. Johnson, Odessa; Mrs. Al Jennings, Sinton; and M. B. Finley, San Benito.

More than 175 physicians and laymen from throughout the state were registered for the meeting, which included sections on medicine and public health, a meeting of the executive committee and board of directors, the annual business meeting, and meetings of the Texas Chapter, American Trudeau Society and the Texas Conference of Tuberculosis Secretaries.

The Trudeau Society elected Dr. James E. Dailey, Houston, president; Dr. Tom R. Jones, Houston, president-elect; Dr. H. M. Anderson, San Angelo, vice-president; and Dr. John A. Wiggins, Jr., Fort Worth, secretary.

The Tuberculosis Secretaries named Dale W. Knotts, Dallas, president; Mrs. Ada B. Smith, Lufkin, vice-president; and Mrs. Maurine Flanagan, Tyler, secretary.

## PEDIATRICS CONFERENCE AT MEDICAL BRANCH

A postgraduate conference in pediatrics will be held at the University of Texas Medical Branch, Galveston, November 8-13, under the auspices of the University of Texas Child Health Program in cooperation with the Maternal and Child Health Division of the State Department of Health. Open to physicians throughout the state, the conference will feature the following distinguished guest speakers: Drs. Robert L. Jackson, associate professor of pediatrics, State University of Iowa, Iowa City; Leo Kanner, director of the Children's Psychiatric Service, Harriet Lane Home for Children, Johns Hopkins University, Baltimore; J. Cyril Peterson, assistant professor of pediatrics, Vanderbilt University School of Medicine, Nashville; Edith Potter, assistant professor of pathology, University of Chicago, Chicago; Orvar Swenson, assistant professor of pediatrics, Harvard School of Medicine, Boston; and Lewis K. Sweet, clinical professor of pediatrics, Georgetown and Washington Universities, Washington, D. C.

University of Texas staff members participating in the conference include Drs. Francis Garbade, R. G. Gibbs, C. G. Grulee, Jr., Arild E. Hansen, A. W. Harrison, Charles A. Hooks, Jule K. Lamar, Charles E. Lankford, George S. McReynolds, Robert M. Moore, Theo. C. Panos, Morris Pollard, Boyd Reading, Lee F. Scarborough, J. A. Scott, Harvey C. Slocum, and John Waterman, and Miss Janet B. Ross and Mrs. Willie M. Verniaud.

The general subjects to be considered are the newborn infant, endocrines and endocrine disturbances, pediatric psychiatry, infectious diseases, and pediatric surgery.

Additional details and registration blanks may be secured through the Director, Postgraduate Division, University of Texas Medical Branch, Galveston, Texas.

## STATE BOARD EXAMINATION

The Texas State Board of Medical Examiners will hold an examination session November 4-6 at the Blackstone Hotel, Fort Worth. Further information is available from the office of the secretary, Dr. M. H. Crabb, Medical Arts Building, Fort Worth.

## ALLERGY COURSE OFFERED

Intensive graduate instruction in allergy will be offered by the American College of Allergists under the auspices of the University of Oregon Medical School, Portland, November 8-12. Specialists in the basic sciences as well as specialists in allergy will lead the panel discussions, demonstrations of techniques, and lecture periods. Members and nonmembers of the College may register for the course, the charge for which is $75. Applications should be sent to Dr. Fred W. Wittich, Secretary, American College of Allergists, 423 La Salle Medical Building, Minneapolis 2, Minn.

## AMERICAN BOARD OF OPHTHALMOLOGY

Registration for the 1949 written qualifying tests for certification by the American Board of Ophthalmology has been closed, but applications are now being accepted for the 1950 written test at the office of the board, Cape Cottage, Maine.

A supplementary alphabetical and geographical list of diplomates from January, 1948, through January, 1949, will be sent without charge to all purchasers of the board's Directory.

## WARNING OF INJURIOUS DRUGS

Two batches of procaine hydrochloride solution manufactured by the C. B. Kendall Company, Indianapolis, Ind., have been found to be highly acid and to cause severe necrotic damage upon injection. The Food and Drug Administration, with the cooperation of the Council on Pharmacy and Chemistry of the American Medical Association, is warning physicians and dentists to be on the watch for vials of this material coded 24830 or 64712.

Investigation has indicated that several other injection products of the C. B. Kendall Company have low hydrogen ion concentration values and should be used with care. Several lots of the drugs have already been voluntarily recalled by the manufacturer. Among the products and code numbers to be watched are the following: Vitamin B Complex Stronger, 54843 and 64844; Vitamin B Complex, 44832 and 54811; Thiamine Hydrochloride, 34817 and 74806; Pentabexin, 44823, 54837, and 64812; Thiadoxin, 34808, 44817, and 64842; Pyridoxine Hydrochloride, 74725; and Procaine Hydrochloride, 74871.

### AMERICAN ASSOCIATION OF BLOOD BANKS

The first annual meeting of the American Association of Blood Banks was held in Buffalo, N. Y., August 26-28, immediately following the International Hematology Society meeting. Approximately two hundred persons were present, representing twenty-eight states and six foreign countries.

Dr. Ralph G. Stillman, New York, was elected president of the association. Miss Marjorie Saunders, William Buchanan Blood Center, Baylor University Hospital, Dallas, was reelected secretary, and Dr. Joseph M. Hill, Dallas, will serve for the second year as a director of the association from District 8. The five officers and the directors from the eight districts constitute the governing body of the association.

Membership in the association is open to "ethical, independently operating and policy making, nonprofit institutions, including those operated by hospitals registered by the American Medical Association, engaged in blood banking." Associate institutional memberships are available to hospitals having no blood bank but interested in blood banking. Individual memberships are open to persons interested in blood banking.

### RURAL PRACTICE ENCOURAGED

A joint fund of $100,000 has been set up by the Illinois Agricultural Association and the Illinois State Medical Society to provide for loans to medical students who agree to practice in rural communities, the Illinois State Medical Society reports. The plan was set up as part of a ten point program to improve the level and distribution of medical care in the rural areas of Illinois. Men from rural communities who have completed premedical courses and who are approved by local farm bureaus and medical societies are eligible for $5,000 loans at the rate of $1,000 a year to complete their four year medical courses and one year internships provided they agree to practice in rural communities.

### DRASTIC DIET REDUCES BLOOD PRESSURE

Laboratory experiment has confirmed wartime evidence that near-starvation benefits persons suffering from high blood pressure, say three scientists from the laboratory of physiological hygiene of the University of Minnesota, Minneapolis. Writing in the August 28 issue of *The Journal of the American Medical Association*, Josef Brozek, Ph.D., Carleton B. Chapman, M.D., and Ancel Keys, Ph.D., report on the effects of near-starvation in Europe during World War II and in a study made at the University of Minnesota.

They found that although semi-starvation diet reduces high blood pressure, the condition of the heart and circulatory system "may be extremely precarious" during the time of refeeding and recovery. When refeeding is done too quickly, even persons who do not have high blood pressure before dieting may acquire it. If high blood pressure occurs or reoccurs while the heart and circulatory system are still in a condition of recovery, heart failure may result, they say.

Wartime experiences in Europe gave scientists much information about the results of semi-starvation which the article analyzes. During the period of severe food scarcity in Leningrad, from September, 1941, to March, 1942, Russian physicians discovered that a decrease in blood pressure was one of the characteristic symptoms of semi-starvation. Further, they noticed that blood pressure was reduced to a normal or nearly normal level in a large number of patients who had chronic hypertension. Symptoms such as headaches and dizziness decreased or completely disappeared. There was also a decrease in heart disease. Similar observations have come from Holland and from concentration camps in France and Germany, the scientists say. "In the two years following the famine in Leningrad, hypertension became a major medical problem," they report.

To test effects of near-starvation, scientists at the University of Minnesota placed 34 normal young men on a diet of less than 1,600 calories daily for six months. The average weight for the group fell nearly 24 per cent in the six months, and there were "striking decreases in blood pressure, pulse rate, and the size of the heart. There was no evidence at this time of increased venous pressure, dilatation of the heart, or difficulty in breathing. However, when the food intake of 12 men was increased rapidly after twelve weeks of controlled rehabilitation, their blood pressure rose. "Findings indicate that the decidedly increased food intake, resulting in an increase of body weight and associated with a decided rise in the basal metabolism, placed a considerable strain on the cardio-vascular system," the scientists point out.

A high record for the proportion of births delivered in hospitals or institutions was reached in 1946, according to data prepared by the National Office of Vital Statistics. Of the 3,288,672 live births recorded for 1946, 82.4 per cent occurred in hospitals and 12.2 per cent were attended by physicians outside hospitals. In Texas, 72.3 per cent of the live births occurred in hospitals and 15.6 per cent were attended by a physician outside hospitals.

## LIBRARY NOTES

### PACKAGE SERVICE

The package library consists of collections of reprints and other periodical material on various subjects, prepared for lending to members of the Association. Requests for packages should be addressed "Library, State Medical Association of Texas, 700 Guadalupe Street, Austin, Texas." Twenty-five cents in stamps should be enclosed with the request to cover postage and part of the expense of collecting the material. Packages are allowed to remain in the hands of the borrower for 14 days.

### ACCESSIONS

The following additions were made to the Library during September:

Reprints received, 622.

Journals received, 247.

Books received, 17.

*Advances in Pediatrics*, Levine and others (editors), from Interscience Publishers, New York.

*Handbook of Orthopedic Surgery*, by Shands; *Microbiology and Pathology*, by Carter; and *Preoperative and Postoperative Care of Surgical Patients*, by Ilgenfritz, from C. V. Mosby, St. Louis.

*Skeletal Tuberculosis*, by Sanchis-Olmos; *Source Book of Orthopaedics*, by Bick; *Clinical Roentgenology of the Digestive Tract*, by Feldman; and *A Method of Anatomy*, by Grant, from Williams and Wilkins Company, Baltimore.

*Zinsser's Textbook of Bacteriology*, by Smith and others (editors), from Appleton-Century-Crofts, Inc., New York.

*Collected Reprints from the Wilmer Ophthalmological Institute of Johns Hopkins University, Volume VIII*, Wilmer Ophthalmological Institute, from Johns Hopkins University Press, Baltimore.

*Treatment by Manipulation*, by Fisher, from Paul B. Hoeber, New York.

*Essentials of Pathology*, by Smith and Gault, from Blakiston Company, Philadelphia.

*A B C's of Sulfonamide and Antibiotic Therapy*, by Long; *General Cytology*, by De Robertis and others; and *Textbook of Histology*, by Maximow and

Bloom, from W. B. Saunders Company, Philadelphia.

*Neurosurgical Pathology*, by Scheinker, from Charles Thomas Company, Springfield, Ill.

*Frontier Doctor*, by Crumbine, from Dorrance and Company, Philadelphia.

SUMMARY OF SERVICE

| | |
|---|---|
| Local users and visitors, 26. | Borrowers by mail, 74. |
| Items consulted, 256. | Packages mailed, 76. |
| Items taken out, 145. | Items mailed, 771. |

Total number of items consulted and loaned, 1,172.

## MOTION PICTURE FILM LIBRARY

Motion picture films on medical subjects, 16 mm., both silent and sound, some in color, and suitable for either medical or lay audiences, are available for loan to county medical societies, hospital staffs, or individual physicians, on request. Borrowers will be required to pay only the cost of shipment of the films, by express, with insurance, and for any damage to films while in the hands of the borrower.

Requests for films should be addressed to "Motion Picture Film Library, State Medical Association of Texas, 700 Guadalupe Street, Austin, Texas." A list of available films, with descriptions, will be furnished on request.

The following motion picture films were loaned by the Film Library during September:

*Anesthesia, Regional* (Winthrop Chemical Company)—Dr. Travis, Jacksonville.

*Blood Transfusion* (British Information Services)—Alexander Clinic, Spur.

*Chest Disease* (British Information Services)—Rotary Club, Ranger.

*Eyes for Tomorrow* (Hurst Hospital)—Lion's Club, Rosenberg.

*Feeding the Infant* (Mead Johnson)—Yazoo County Medical Society, Yazoo City, Miss.

*Glaucoma Operations* (Dr. K. J. Karnaky)—Fort Worth Eye, Ear, Nose, and Throat Society, Fort Worth.

*Hematology, Animated* (Armour Laboratories)—Rotary Club, Ranger.

*Human Fertility* (Ortho-Products, Inc.)—Dr. Travis, Jacksonville.

*Hypodermic Needles and Syringes* (Becton, Dickinson & Company)—Medical Gathering, Dallas.

*Injuries, Care of Athletic Type* (Becton, Dickinson & Company)—Alexander Clinic, Spur.

*Novocaine Anesthesia* (Winthrop Chemical Company)—Obstetrics and Gynecology Staff, Brackenridge Hospital, Austin.

*Strabismus Surgery* (Dr. Ray K. Daily)—Fort Worth Eye, Ear, Nose, and Throat Society, Fort Worth.

*Time Is Life* (American Cancer Society)—Lion's Club, Rosenberg.

*Trichomonal and Monilial Vaginitis* (Searle Laboratories)—Obstetrics and Gynecology Staff, Brackenridge Hospital, Austin.

*Urinary Antisepsis* (Mead Johnson)—Physicians of Perlstein Building, Beaumont.

*Uterosalpingography* (Fougera & Company)—Medical Gathering, Dallas.

*Treatment of Varicose Veins* (Searle Laboratories)—Physicians of Perlstein Building, Beaumont.

*Varicose Veins and Their Complications* (Becton, Dickinson & Company)—Alexander Clinic, Spur.

## BOOK REVIEWS

[1]**Textbook of Endocrinology.** By Hans Selye, M. D., Ph. D. (Prague), D. Sc. (McGill), F. R. S. (Canada). Cloth, 990 pages. Price $10.50. Montreal, Canada, University of Montreal, 1948.

The author has offered in this book a comprehensive treatise on the rapidly expanding subject of endocrinology, covering every phase in an admirable fashion.

The first chapter is given to the discussion of general endocrinology, followed by detailed presentation of topics such as the steroids, adrenals, hypophysis, ovary, pancreas, parathyroids, pineal, testis, thymus, and thyroid glands. The last two chapters are devoted to hormones and hormone-like substances produced by simple endocrine, exocrine, and non-gland organs.

Each endocrine gland is thoroughly discussed according to history, morphology, chemistry, and physiology, both established and experimental concepts. Diagnosis and treatment are presented in detail.

The text is profusely illustrated with diagrams, case presentations, gross and histologic (both normal and pathologic) specimens.

In spite of its comprehensiveness, the book is well written and in an interesting style. It is a veritable atlas of reference for anyone interested in the subject of endocrinology, whether he be biochemist, pathologist, or clinician.

[2]**Sexual Behavior in the Human Male.** By A. C. Kinsey, Professor of Zoology, Indiana University; W. B. Pomeroy and C. E. Martin, Research Associates, Indiana University. Cloth, 804 pages. Price, $6.50. Philadelphia and London, W. B. Saunders Company, 1948.

This is the most comprehensive book on this subject in recent years. It analyzes some 5,000 interviews in a detailed manner, and deals with the white male from preadolescence to old age. It is concerned chiefly with six topics: masturbation, nocturnal emissions, heterosexual relations (premarital, marital, and extramarital), homosexual outlets, and animal contacts.

An introduction of methods of interviewing, with statistical problems and validity of data, comprises the first part of the book. This is followed by a discussion of the numerous factors affecting the sexual outlet of the human male. Some of these factors are early sexual growth of the preadolescent and adolescent, total sexual outlet, age, marital status, age of adolescence, social level, and rural-urban and religious background in regard to occupational classes.

A valuable set of clinical tables may be found at the conclusion of the text aside from the vast number of charts and graphs throughout the main course of the book.

The reviewer found this book to be of extreme enlightenment on a number of controversial subjects that should be of interest to the general profession. No moral issues are discussed, but a profound scientific text, with excellent bibliographies and references, is furnished. More work in this field is to be published at a later date by this same group of authors.

[3]**Psychiatry, Its Evolution and Present Status.** By William C. Menninger, M. D. Cloth, 138 pages. Price, $2. Ithaca, N. Y., Cornell University Press, 1948.

In this monograph, Dr. Menninger, in his own inimitable manner, has brought the high power microscopic lens of our thinking on the distinctive place that psychiatry holds in the world today. It describes in a clear, concise fashion the past, present, and future of psychiatric thought. It is a true longitudinal dynamic discussion in common every

[1]Reviewed by William T. Teague, M. D., Plainview.

[2]Reviewed by E. P. Tottenham, M. D., Mineola.

[3]Reviewed by Charles H. Brown, M. D., Wichita Falls.

day terms of what might be classed as the psychoanalysis of psychiatry. In the first chapter, he discusses the development of psychiatry and its broad relationship with other fields, and he does a masterful job in discussing the interrelationship with other fields of human thought that tend toward happiness in the human being. The second chapter is an unusually lucid evaluation of the major elements in our understanding of the human being.

The third chapter is of the greatest importance as it deals with documentary proof of the fields in our human relationships which have been attacked, partially overcome, and which are expected to be attacked in the future by broader psychiatric visions. He describes means for improving our present problems in education, industry, courts, and, even more important, our international relations through utilization of psychiatric mechanisms. A great deal of this book was presented by Dr. Menninger in an address before the American Psychiatric Association in New York in 1947, and it was one of the few occasions upon which a speaker was given a rising ovation coming spontaneously from all his listeners. This volume carries the same "punch" that his speech carried on that occasion. All who are interested in the study of psychiatry, the practice of psychiatry, general medicine, or the general broad groups of specialties that are involved in the welfare of the human being would derive immeasurable benefits by looking through this microscopic lens at the scope of work that can and must be done.

[4]**Treatment in General Practice.** By Harry Beckman, M.D. Cloth, 1,129 pages. Price, $11.50. Philadelphia, W. B. Saunders Company, 1948.

This new edition of Dr. Beckman's well-known book fully lives up to the standards which the previous editions have set. In a day of rapidly changing therapeutics, in which any text is almost out of date when it is released by the publisher, this volume is surprisingly up to date. This edition appears only two and a half years after its predecessor, and the author states in his preface that he intends to bring out new editions every two years.

There have been added several subjects for discussion which have not been considered in previous editions, especially notable among which are some of the tropical diseases which became of general interest following the recent war. The treatment of thrombosis and embolism, previously not included in this book, has been added. The more recently described rickettsialpox and Colorado tick fever, Reiter's syndrome, as well as other diseases which have received emphasis in recent current literature, are included.

Dr. Beckman follows his usual method of giving a brief discussion of the disease and a statement of historical background, followed by an appropriately lengthy dissertation on treatment, including the controversial points and the author's opinion on them. Many of the sections have been entirely rewritten and greatly added to. There are occasional illustrations of techniques, diet lists, and prescriptions which enhance the text.

The author is still skeptical of the results of the surgical treatment of hypertension, but includes much of the statistical data from the more recent publications on the subject. The low sodium diet for hypertension is not included in this edition, nor are some of the more recently advocated methods of managing the patient with anuria.

As a desk reference for the physician in general practice, for whom the book is intended, Beckman's "Treatment" leaves little to be desired. The author's style is pleasing, amusing at times, brief without omitting important details, and opinionated enough to give the book character.

[4]Reviewed by Ralph G. Greenlee, M. D. Temple.

[5]**A Textbook of Clinical Pathology.** By Francis P. Parker, M. D. Third edition, 1,023 pages. Price, $9. Baltimore, Williams and Wilkins, 1948.

The third edition of this textbook, coming eight years after the second edition, has been extensively revised and considerably expanded. Dr. Parker was assisted in this work by seven contributors well known in the field of clinical pathology.

Hematology is well covered in seven chapters by five contributors. Of special interest and value is the chapter on blood groups by Dr. I. Davidsohn. In the chapter on blood parasites there are excellent color plates showing the appearance of malarial plasmodia in thick films.

In the chapter on clinical blood chemistry a discussion of the significance of alterations in the various constituents precedes the outline of the corresponding technical methods. Chemical methods of assay for vitamins A, $B_1$, $B_2$, C, and E are included in the chapter on vitamins. In the chapter on hormones, procedures are given for the simpler and more useful diagnostic tests. The technique of the frog test for pregnancy is included.

Liver function tests are well covered in a separate chapter, but the newer methods for serum bilirubin and urinary and fecal urobilinogen are not mentioned.

A complete chapter on immunologic tests contains valuable information ordinarily not found in texts on clinical pathology. Likewise, in the section on the diagnosis of venereal lesions there is much useful and practical information.

In the chapter on serologic tests for syphilis the Boerner-Lukens complement fixation method, the Boerner-Jones-Lukens flocculation test, and the Mazzini flocculation test have been added.

Pathogenic fungi are briefly discussed in the sections on the sputum and under skin scrapings. In the chapter on cerebrospinal fluid there is an illustration of Torula histolytica, but no discussion of this fungus is to be found in the text.

References to the literature are to be found at the end of each chapter. The general format of the book is excellent.

This is a fine textbook for students of clinical pathology and can be warmly recommended to both practitioners and laboratory workers.

[6]**Laboratory Experiments in Physiology.** By W. D. Zoethout, Ph.D. Cloth, 263 pages, fourth edition, illustrated. Price, $3. St. Louis, C. V. Mosby Company, 1948.

This edition marks no great change from the preceding one. The early chapters of the guide are devoted to brief statements of elementary principles of physics as applied in standard physiologic apparatus, to descriptions of physical properties of solutions and membranes, and to simple experiments demonstrating these principles and properties.

The remainder of the book is concerned with experiments dealing with physiologic properties and reactions of those organs and systems amenable to experimental work in elementary courses. It is not a guide for a course in medical physiology. There are relatively few mammalian experiments.

The directions are clear and in sufficient detail to be easily followed. Illustrations of dissections and arrangements of apparatus are effectively employed, and well chosen questions are used to lead the student in understanding the purpose of the experiments and in correlating experimental observations with textbook subject matter.

[5]Reviewed by W. N. Powell, M. D., Temple.
[6]Reviewed by Robert W. Lackey, Ph. D., Dallas.

The experimental procedures described are numerous enough to allow some degree of selection while still affording adequate material for a course of the academic level for which the guide is designed. The addition of some experiments on body temperature regulation might be desirable. The sections on chemistry of carbohydrates, proteins, and fats are adequate as an aid to an understanding of the physiology of digestion on the part of students who have not had a course in physiologic chemistry.

[7]**Communicable Disease Control.** By Gaylord W. Anderson, A.B., M.D., Dr. P.H. and Margaret G. Arnstein, R.N., M.A., M.P.H. Cloth, 432 pages, second edition. Price, $5. New York, Macmillan Company, 1948.

This is a book written by public health workers for the use of the health officer and nurse in the control of communicable disease. It should be read by every practitioner of medicine in order to give him an insight into the procedures necessary to the control of communicable disease under present day conditions. This second edition brings into the picture all the approved methods which have come to light in the last few years.

This work is divided into two parts. The first part deals with the control of communicable disease in general, starting with early historical considerations and bringing it up to date, showing methods of infection and immunity and giving control measures used in most communicable diseases. Here are also discussed the legal basis of control, the administrative agencies responsible for control, and general methods of epidemiologic investigation in the control of communicable diseases.

The second part deals with the control of individual diseases, giving the special measures necessary in the control of each. An attempt has been made to evaluate the relative effectiveness of various control measures. It outlines the programs which yield the greatest results for the smallest expenditure of money.

This book is well written and can be read easily and rapidly.

[8]**Synopsis of Operative Surgery.** By H. E. Mobley, M.D., F.A.C.S. Cloth, 416 pages, second edition. Price, $6. St. Louis, C. V. Mosby Company, 1947.

This book is representative of all such synopses which this reviewer has read. If the surgeon is not already completely familiar with the operation, the directions given are not comprehensive enough to teach him the technique. If the surgeon already knows the technique, there is no point in his reading the book. The illustrations are not unusual, and so far as the reviewer is able to find, there are no new or original suggestions.

This book might be of some use to a medical student or an aspirant to certification by the American Board of Surgery in reviewing for examinations.

[9]**Hemostatic Agents.** By Walter H. Seegers, M.S., Ph.D., and Elwood A. Sharp, M.D., Sc.D. Cloth, 131 pages. Price, $4.50. Springfield, Ill. Charles C. Thomas, Publisher, 1948.

The authors have presented in this monograph a discussion of the latest concepts of the intricate mechanism of blood coagulation, dealing with both the experimental work and the practical aspects.

The first chapter is devoted to a treatise on the various substances involved in blood clotting and the sequence of their reactions. According to the authors, the entire mechanism is produced by the following reactions: prothrombin-thromboplastin reaction, clotting of fibrinogen (with sub-discussions of the effects of pH, temperature, salts, calcium, and other factors on the rate of clotting), fibrinolysis inactivation of prothrombin with thrombin, inactivation of prothrombin with fibrinolysis, inactivation of thrombin with antithrombin, inactivation of fibrinolysis, and inactivation of profibrinolysis.

Subsequent chapters are devoted to a discussion of the clinical application of thrombin, fibrinogen, oxidized cellulose, fibrin foam, and gelatin sponge in the various fields of medicine and surgery.

[10]**Modern Clinical Psychiatry.** By Arthur P. Noyes, M.D. Cloth, 507 pages, third edition. Price, $6. Philadelphia, W. B. Saunders Company, 1948.

As Dr. Noyes points out in the preface, "the eight years that have elapsed since the publication of the previous edition of this book have been characterized by remarkable development of interest in psychiatry." That this interest is especially in fields other than institutional psychiatry is apparently noted by Dr. Noyes as he presents a fuller discussion of the dynamic principles of the psychoneuroses, gives more space to psychosomatic problems, and adds new chapters on psychotherapy and child psychiatry. The fact that Dr. Noyes does not go farther limits the use of this book as a text for medical students, since the majority will have only minor interest in the major psychoses.

Some of the newer physical therapies, such as electro-shock and prefrontal lobotomy, are adequately discussed for a book of this type.

In summary, it can be said for the benefit of those not familiar with previous editions that this book is excellent for the beginner in psychiatry. For this beginner, the material is presented in an interesting, simple, and acceptable fashion.

[11]**Vascular Diseases in Clinical Practice.** By Irving Sherwood Wright, M.D., Associate Professor of Clinical Medicine, Cornell University Medical College and Chief of Section on Vascular Diseases, Department of Medicine, New York Hospital. Cloth, 514 pages. Price, $7.50. Chicago, Year Book Publishers, Inc., 1948.

This volume is a valuable asset to the general practitioner, as well as to the student, in the recognition of vascular diseases. For instance, the second chapter, headed "Methods of Study of the Patient," is meticulously and carefully written. It details the various methods by which vascular diseases may be diagnosed. The chapter on "Thromboangiitis Obliterans" gives much experimental evidence to show that tobacco is definitely detrimental in cases of this type. The final chapter gives excellent evaluation of the medicolegal aspects of injuries to the vascular system, covering both vascular disease as produced by injury and injuries to persons suffering from various types of vascular disease.

This book is well illustrated with colored plates and first class photographs.

[7]Reviewed by David M. Cowgill, M. D., Abilene.
[8]Reviewed by I. M. Ward, M. D., Fort Worth.
[9]Reviewed by William H. Teague, M. D., Plainview.
[10]Reviewed by Walter L. Ford, M. D., Houston.
[11]Reviewed by J. F. McVeigh, M. D., Fort Worth.

## NEWS

**Contributions to this department will be appreciated. News should be of general medical interest, such as public health activities, new hospitals, personal items of more than local value, etc. News for a particular number of the JOURNAL should be in the hands of the Editor not later than the fifteenth of the preceding month.**

**The Pan-Pacific Surgical Association** held its fourth congress in Honolulu, August 30-September 13, the first since World War II. Participating in the congress, held "to bring together surgeons from all countries bordering on the Pacific . . . to permit

the exchange of surgical ideas and methods, to develop an acquaintanceship among the surgeons, meeting on a common ground, so that they may be instrumental in developing a spirit of good fellowship among the races, represented at the Conference," were a number of Texans. Chauncey D. Leake, Ph.D., vice-president of the University of Texas Medical Branch, Galveston; Dr. Raleigh R. White, Temple; Dr. Edgar Poth, University of Texas Medical Branch, Galveston; and Dr. C. M. Pomerat, University of Texas Medical Branch, Galveston, presented papers on surgery. Dr. Leake also appeared at a public meeting devoted to the cancer problem. Dr. Walter Stuck, San Antonio, was on the program for orthopedic surgery and also for the Plantation Physicians Association. Dr. Ruby K. Daniel, Dallas, read a paper before the ophthalmology section. Colonel Elbert DeCoursey, Brooke General Hospital, Fort Sam Houston, spoke on "Pathology of Ionizing Radiations from the Atomic Bomb."

**The National Advisory Heart Council,** provided for in the National Heart Act of June 16, 1948, has been appointed by Oscar R. Ewing, Federal Security Administrator. Dr. Tinsley Harrison, Dallas, dean of faculty and professor of internal medicine at Southwestern Medical College and president of the American Heart Association, is one of the twelve members chosen. Announcement from the National Institute of Health indicates that the council will advise with the National Heart Institute in the development of research programs designed to help in the attack on cardiovascular diseases; review and make recommendations to the Surgeon General on applications from institutions and individuals for research and training grants; make a collection of information on research in heart diseases; and advise on the whole program of the National Heart Institute for controlling cardiovascular diseases.

**Nursing Technicians** will be trained this year for the first time by Baylor Hospital, Dallas, in a nine month course designed to help relieve the shortage of nurses, reports the Dallas *Times-Herald.* Open to all young women with high school education between the ages of 18 and 25, the course will also be open to older applicants on a basis of personal merit without regard to educational qualifications. A new course will be started every four months, and students will receive pay after the first month.

**St. Joseph's Hospital,** Fort Worth, broke ground for a $450,000 annex on September 15. The Fort Worth *Star-Telegram* states that the five story addition providing 100 hospital beds, a chaplain's room, and two large recovery rooms is expected to be completed by March.

**Consolidation of Dallas Children's Hospitals** has been recommended by Joseph G. Norby, Milwaukee, president of the American Hospital Association, who has just completed a report on health facilities for children in Dallas County, informs the Dallas *News.* The report has been accepted and approved by the Health Council of the Dallas Council of Social Agencies, which requested the survey, and the report will become part of the over-all health improvement program planned by the Council of Social Agencies. Mr. Norby suggested abandonment of Bradford Memorial Hospital for Babies and remodeling it into a home for nurses; enlargement of the Children's Hospital of Texas from 52 to 200 beds; expansion of Richmond Freeman Memorial Clinic to provide clinic service and diagnosis for all children, not only charity patients; establishment of a single nine member board of directors with over-all control of the consolidated medical center; and cooperation with the consolidated group by Scottish Rite Hospital for Crippled Children and Hope Cottage, a Community Chest supported home for abandoned infants. Mr. Norby pointed out that the proposed children's unit would doubtless have to be supported by tax funds.

**The Sweeney Diabetic Foundation** has launched a campaign to raise $100,000 for establishment of a camp for diabetic children and a research laboratory for diabetic and allied research, the camp to be on 400 acres of land eight miles northeast of Gainesville and the laboratory to be in Gainesville. The foundation was organized a year ago by the citizens of Gainesville and named for Dr. J. Shirley Sweeney, authority on diabetes who was persuaded to return from Dallas to his boyhood home and become director of the enterprise. Since the project was decided upon, according to the Gainesville *Register,* blueprints for the camp and laboratory have been drawn up, prominent business and professional men outside Gainesville and Cooke County have been interested, and the financial campaign now in progress has been planned. The project has been endorsed officially by the Cooke County Medical Society.

**The Texas Diabetic Trust Fund,** organized in November to raise funds for research in diabetes and to create an interest in diabetes in this section of the country, presented Dr. Elliott P. Joslin, Boston authority on diabetes, in a public lecture in Dallas on September 21, according to the East Dallas *Round-Up.* Dr. Joslin was in Dallas to teach a course in metabolic disorders sponsored by the Dallas Southern Clinical Society, and was made available for the public lecture through the courtesy of the clinical group. The Texas Diabetic Trust Fund is patterned after the Diabetic Fund of Boston, which was founded by Dr. Joslin in 1944. The Texas organization has its headquarters in Dallas, and has been endorsed by the Dallas County Medical Society, Southwestern Medical Foundation, Dallas Southern Clinical Society, and other similar groups.

**The Harris County Academy of General Practitioners** has been organized in Houston along the lines suggested by the American and Texas Academies of General Practice, reports the Houston *Chronicle.* Officers named include Drs. Lyman C. Blair, president; T. P. Kennerly, vice-president; M. E. Petway, secretary; and B. H. Bayer, treasurer.

**The M. D. Anderson Hospital for Cancer Research,** Houston, has been allotted $500,000 in federal funds under the Hill-Burton hospital survey and construction act, and Dr. R. Lee Clark, Jr., hospital director, has indicated that construction of the hospital building in the Texas Medical Center will probably begin early in 1949. The Houston *Chronicle* reports Dr. Clark as pointing out that $3,000,000 is already on hand, having been appropriated by the State Legislature, and that additional funds are available in contributions from the M. D. Anderson and Rosalie B. Hite Foundations and public donations. He said also that the application for federal funds had been for $1,500,000 and that it was hoped the full request would be granted over a period of three years. The new M. D. Anderson Hospital building will house the University of Texas Postgraduate School of Medicine, Dr. Clark informed, until a separate building in the Texas Medical Center can be erected. The cancer hospital is a part of the University of Texas.

Dr. Clark has been appointed by the board of regents of the University as dean and professor of surgery of the new Postgraduate School of Medicine.

**The University of Texas Medical Branch,** Galveston, has announced that because of advanced operating costs, the appropriations for support of the Medical Branch hospitals for the fiscal year ending September 1, 1949, will be inadequate to maintain

the hospitals throughout the coming year. Consequently, the Board of Regents has directed that charges commensurate with the ability of the patient to pay be charged for hospital and clinic services; no charge will be made to low income patients for the services of physicians. Chauncey D. Leake, Ph.D., vice-president; B. I. Burns, administrator of hospitals; and Dr. Raymond Gregory, director of the diagnostic clinic, are requesting the cooperation of physicians throughout the state who refer low income patients to the Medical Branch in helping to arrange for payment of as large a portion as possible of hospital charges.

Recent additions to the staff of the Medical Branch include Dr. Grant S. Holmes, recently in charge of dermatology and syphilology groups at various Army hospitals in the European Theater, as assistant professor of dermatology and syphilology; Dr. John Harris, formerly in charge of dermatology and syphilology at New York Medical School, as lecturer in dermatology and syphilology; and Dr. Melville Sahyun, research consultant in biochemistry and nutrition of Santa Barbara, Calif., as lecturer in biochemistry and nutrition.

Funds for special studies have been received as follows: from the late Harry C. Weiss, chairman of the board of directors of the Humble Oil and Refining Company, Houston, $5,000 to support studies on sinus fluids under the direction of Dr. J. M. Robison, professor of otorhinolaryngology; National Foundation for Infantile Paralysis, $9,400 to support studies on polio virus under the direction of Dr. Morris Pollard, director of the Virus Laboratory; Lederle Laboratories, Pearl River, N. Y., $2,500 to support studies on rickettsial diseases under the direction of Dr. Ludwik Anigstein, director of the Rickettsial Research Laboratory; Office of Naval Research, $10,000 for research on the tropical rat mite in relation to its role as vector of filariae under the direction of Dr. J. Allen Scott, professor of epidemiology; and the Sugar Research Foundation, N. Y., to support studies by Dr. W. A. Selle, professor of physiology, on carbohydrates in relation to liver cancer.

### Personals

*Dr. J. F. Kimball,* Dallas, retired former executive vice-president of Baylor University in charge of Dallas medical units and hospital, was made an honorary member of the American Hospital Association in September and received a special citation for outstanding contributions to health and hospitals, reports the Dallas *Times-Herald.* Dr. Kimball began a sick benefit program for Dallas school teachers which has grown into the Blue Cross plan of hospital care. *Mr. and Mrs. Roy Cullen,* Houston philanthropists, were also among the fifty men and women throughout the nation selected to be honored at the fiftieth anniversary convention of the American Hospital Association.

*Dr. John McGivney,* Galveston, was elected a member of the American Proctologic Society recently, according to the Galveston *Tribune.* He is the tenth physician in Texas to be so recognized.

*Dr. Harvey Renger,* Hallettsville, reigned as King of the 1948 Lavaca Fiesta in Hallettsville in September, reports the Hallettsville *Tribune.*

*Dr. Peel M. Payne,* Asherton, received a certificate of merit at the commencement exercises of the University of Tennessee, Memphis, in September, according to the Carrizo Springs *Javelin.* Dr. Payne was graduated fifty-five years ago from the Memphis Hospital Medical College, now a part of the University of Tennessee.

*Dr. T. M. Collins,* Big Spring, was honored on his eightieth birthday September 2 with a barbecue dinner at the ranch home of a son, O. C. Collins, of Midland, states the Big Spring *News.*

### Marriages

*Dr. David Laurance White,* San Marcos, married Mrs. Mabel Smith Hall, Hearne, on August 14.

*Dr. Emory Davenport,* Fort Worth, married Miss Rachel Norman, Trenton, on September 1.

### Births

To *Dr. and Mrs. Alan W. Butler, Jr.,* Fort Worth, twins, Robert Alan and Barbara Ann, August 11.

## SOCIETY NEWS

### Dallas County Society

September 9, 1948

(Reported by W. W. Fowler, Secretary)

The Doctor and His Investments—Mr. R. L. Thornton, Dallas.

Dallas County Medical Society met September 9 in Dallas to hear a discussion of investments by Mr. R. L. Thornton, chairman of the board of directors of the Mercantile National Bank. A question and answer period followed his address.

Resolutions of tribute to the late Dr. C. E. Harrington and the late Dr. Howard Hogan, both of Dallas, were adopted by rising vote.

Henry Phillip Hare, Jr., was elected to membership upon application; William Graves McPheron and Ludwig Alexander Furchtgott upon transfer.

### Falls County Society

September 13, 1948

The Poliomyelitis Problem—Neil Buie, Marlin.
Streptomycin in Treatment of Brucellosis; Preliminary Report—J. B. Barnett, Marlin.
Recent Interesting Cases—Tom G. Glass, Marlin.

The program outlined was presented under the direction of J. W. Torbett, Marlin, program chairman, when the Falls County Medical Society met September 13 in Marlin.

### Grayson County Society

September 14, 1948

(Reported by Robert W. Duncan, Secretary)

American Academy of General Practice—H. T. Jackson, Fort Worth.
Treatment of Acute Brucellosis—W. P. Higgins, Jr., Fort Worth.

Two visitors from Fort Worth presented the program for twenty-one members of the Grayson County Medical Society, meeting September 14 in Denison. The society approved a resolution on blood banking agencies adopted by the House of Delegates of the State Medical Association. Robert L. Duff was accepted as a member on transfer from Bell County Medical Society. Raymond Morphew, the new director of the Grayson County Health Unit, was introduced.

### Gray-Wheeler-Hansford-Hemphill-Lipscomb-Roberts-Ochiltree-Hutchinson-Carson Counties Society

September 14, 1948

Diagnosis of Cancer of the Lung (slides)—Paul De Camp, Tulane University, New Orleans.

Approximately fifty physicians were present for the first consolidated meeting of the Top o' Texas Medical Society, which was chartered recently and includes Gray, Wheeler, Hansford, Hemphill, Lipscomb, Roberts, Ochiltree, Hutchinson, and Carson Counties. The meeting, held September 14 in Pampa, featured a paper on cancer of the lung by Paul De Camp, Tulane University, New Orleans.

A male quartet, "Melody Menders," provided music for the banquet meeting, and during a business session the physicians considered problems confronting doctors in the area. M. C. Overton, Jr., Pampa, is president of the society; Charles H. Ashby, Pampa, is program chairman; and H. M.

Hamra, Borger, is secretary-treasurer. Meetings will be held the third Tuesday of each month.

### Jefferson County Society

September 13, 1948

(Reported by E. Mittendorf, Executive Secretary)

Plastic Surgery in General Practice (lantern slides)—T. G. Blocker, Jr., Galveston.
Discussion—Norman Duren and J. N. Gardner, Beaumont.

Fifty-six members of Jefferson County Medical Society met in Beaumont on September 13. T. G. Blocker, Jr., professor of surgery at the University of Texas Medical Branch, Galveston, discussed plastic surgery as it applies to general practice.

Letters from the Kermit Lions Club and from the Veterans Administration office in Waco requesting assistance in securing physicians were read.

Seab J. Lewis, Beaumont, was appointed representative to a meeting to be held by the committee for "Employ the Handicapped Week," and W. J. Graber, Beaumont, and L. C. Carter, Port Arthur, were appointed representatives to the Jefferson County Health Council.

A special committee of Lamar C. Bevil and J. C. Crager, Beaumont, and T. B. Matlock and W. E. McRee, Port Arthur, was appointed to investigate and study a proposal for the organization and operation of a Red Cross blood bank. The committee on economics was requested to consider a proposal to formulate a definite plan whereby financial assistance could be extended in cases of prolonged illness of society members and their families.

John Walter Sloan, Port Arthur, was accepted for membership upon application.

The society decided to invite members of all societies in District 10 to be guests of the Jefferson County Society at a dinner meeting to be held in Beaumont in November with G. V. Brindley, Temple, President-Elect of the State Medical Association, as speaker, provided that Dr. Brindley can accept the invitation. L. C. Powell, Beaumont, was appointed chairman of the committee on arrangements.

### Lamar County Society

September 2, 1948

(Reported by Thomas E. Hunt, Jr., Secretary)

Prostatitis—D. P. Booner, Paris.
Discussion—H. H. White and George S. Woodfin, Paris.

A discussion of prostatitis by D. P. Bonner provided the scientific program for the September 2 meeting of the Lamar County Medical Society, held in Paris. D. F. Kerbow, Paris, president, presided over the meeting, which followed dinner. Dr. Bonner pointed out that obstructions in the neck of the urinary bladder usually occur in men from 50 to 70 years of age, and that the most common earlier symptoms are difficulty in urination and difference in urination. He listed history, rectal palpation, cystoscopic examination, and kidney, ureter, and bladder examination as the methods of diagnosis, and stressed the importance of preparing the patient for surgery if surgery is necessary. Dr. H. H. White in discussing the paper emphasized the value of catheterizing for residual urine.

### Lubbock-Crosby Counties Society

September 7, 1948

(Reported by Roy G. Loveless, Secretary)

Forty-two members of Lubbock-Crosby Counties Medical Society met September 7 in Lubbock and discussed primarily the public health of Lubbock. Mr. Gerald E. Jarvis of the City Health Department explained in detail the activities of the department and the plans for its enlargement in the near future. E. L. Hunt, chairman of a special committee on public health, reported to the society with the following recommendations: (1) that the city and/or county employ a full-time doctor of public health to act as health director; (2) that the department employ a full-time social worker and two public health nurses to investigate and dispose of all cases referred to it; (3) that regulations and laws pertaining to health be revised; (4) that a school physician and additional school nurses be employed; (5) that a building to house the city laboratories, department of public health and welfare, and additional agencies concerned with public health be provided; (6) that a full-time physician be employed for the out-patient care of indigents; (7) that Mr. Gerald E. Jarvis be appointed as a full-time executive assistant health officer; and (8) that the public health department and the welfare service department be completely disassociated.

Reports of the chairmen of the various committees for the Third District Medical Society meeting to be held in Lubbock in October were given.

### Randall-Deaf Smith-Parmer-Castro-Oldham Counties Society

September 1, 1948

(Reported by M. W. Nobles, Secretary)

Geriatrics—Oscar H. Lloyd, Vega.

Members of the Randall-Deaf Smith-Parmer-Castro-Oldham Counties Medical Society met September 1 in the home of Dr. Oscar H. Lloyd, Vega. The address of the evening, on the subject of geriatrics, was presented by Dr. Lloyd. Two dentists were guests. Refreshments were served.

### Tarrant County Society

September 7, 1948

(Reported by W. P. Higgins, Jr., Secretary)

Cardiolipin—John J. Andujar, Fort Worth.
Discussion—May Owen and T. C. Terrell, Fort Worth.
Subtotal Gastric Resection As Treatment for Peptic Ulcer—Harold J. Shelley, Fort Worth.
Discussion—W. S. Lorimer, Jr., R. G. Lemon, T. H. Thomason, and Burgess Sealy, Fort Worth.
Intocostrin in Poliomyelitis (motion picture)—Courtesy of E. R. Squibb & Sons.

Sixty-two members and four visitors attended the September 7 meeting of Tarrant County Medical Society in Fort Worth. The scientific program outlined was presented.

The secretary read a proposed revision of the by-laws of the society having to do with signs at the residence or office of a physician or clinic.

Bert Ball commented on a letter received from C. J. Koerth, Kerrville, member of the Committee on Tuberculosis of the State Medical Association, suggesting that a tuberculosis committee be appointed from the society, to be composed of five members with overlapping five-year terms of office.

A letter from Dr. R. G. Baker, Fort Worth, councilor of the Thirteenth District, requesting papers for the Sections on Surgery and General Practice for the next annual session of the State Medical Association was read. T. H. Thomason, chairman of the cancer committee, reminded members of the Southwest Regional Cancer Conference in Fort Worth on October 12, and Stephen W. Wilson, secretary of the Thirteenth District Medical Society, reminded members of the district meeting in Mineral Wells, November 11-12.

B. H. Beard, Eugene D. Olcott, Herman C. Sehested, R. J. Rimmer, and Thomas J. Coleman were accepted for membership upon transfer.

September 21, 1948

(Reported by W. P. Higgins, Jr., Secretary)

Intestinal Obstruction—R. J. White, Fort Worth.
Discussion—R. G. Lemon and Cyrus L. Worrall, Fort Worth.
Surgical Treatment of Colonic Obstruction—W. S. Lorimer, Jr., Fort Worth.
Discussion—R. G. Baker, T. H. Thomason, and W. C. Tatum, Fort Worth.

The program outlined was presented for seventy-two members and three visitors of Tarrant County Medical Society on September 21 in Fort Worth. A representative from the National Federation of

Small Businesses was introduced by W. B. West. He spoke briefly regarding the purposes of the group and stated that the district manager would call on each member of the society.

Upon motion by W. P. Higgins, Jr., seconded by Dr. West, the society rejected the proposed amendment dealing with signs at residences and offices of physicians, and authorized appointment of a committee to word an amendment on the subject which would be acceptable to the society.

A motion proposed by the public relations and legislative committee and suggesting assignment of a call number to each physician so that he would be paged by call number in public gatherings rather than by name failed to carry.

J. W. Colvin, J. Foster Elder, Harvey B. Snyder, D. E. Neal, and E. D. Taylor were elected to membership upon application. C. T. Ashworth was received by transfer from Dallas County Medical Society.

### Webb-Zapata-Jim Hogg Counties Society

August 3, 1948

(Reported by M. Valls, Secretary)

Cancer and Cancer Detection by Laboratory Methods—David A. Todd, San Antonio.

A talk on cancer was presented by David A. Todd, San Antonio, for the Webb-Zapata-Jim Hogg Counties Medical Society in Laredo on August 3.

A letter from the Boys Club of Laredo requesting medical assistance for about 1,600 boys was read. It was decided that the individual family physicians would devote certain hours at their offices for the type of work requested.

It was announced that in order for the indigent x-ray clinic at the Laredo City Clinic to take roentgenograms, a note from his family physician had to be presented by the patient.

J. T. Lowry, director of the City-County Tuberculosis Sanitarium, expressed his desire to retire from that position. V. L. Puig, president, appointed a committee to study the problem.

M. L. Fuller, director of the Laredo-Webb County Health Unit, spoke regarding public health in Laredo.

September 7, 1948

(Reported by M. Valls, Secretary)

Rex Ross, W. H. Heck, and A. M. Rodgers, San Antonio, presented a program on hematuria at the September 7 meeting of the Webb-Zapata-Jim Hogg Counties Medical Society in Laredo. The secretary, M. Valls, presided in the absence of the president and vice-president.

The monthly narrative report of the Laredo-Webb County Health Unit was read. A communication from the State Health Department was read. It requested physicians to confirm diagnoses of typhus fever with complement fixation tests.

## AUXILIARY NOTES

Officers of the Woman's Auxiliary to the State Medical Association of Texas: President, Mrs. S. M. Hill, Dallas; President-Elect, Mrs. Joseph B. Foster, Houston; First Vice-President (Organization), Mrs. O. W. Robinson, Paris; Second Vice-President (Physical Examination), Mrs. Robert F. Thompson, El Paso; Third Vice-President (Hygeia), Mrs. J. C. Terrell, Stephenville; Fourth Vice-President (Program), Mrs. Edward W. Coyle, San Antonio; Corresponding Secretary, Mrs. Cecil O. Patterson, Dallas; Recording Secretary, Mrs. R. E. Clark, Memphis; Treasurer, Mrs. V. M. Longmire, Temple; Publicity Secretary, Mrs. H. S. Renshaw, Fort Worth; Parliamentarian, Mrs. J. C. Sharp, Corpus Christi.

### STATE EXECUTIVE BOARD MEETING
### SEPTEMBER 22, 1948

The meeting of the Executive Board of the Woman's Auxiliary to the State Medical Association of Texas was called to order by the President, Mrs. Samuel M. Hill, at 2:00 p. m. in the library of her home, 3617 Lexington Avenue, Dallas, Texas.

Mrs. Charles Alexander, San Antonio, gave the invocation.

The Auxiliary Pledge was given in unison.

In her opening remarks, Mrs. Hill thanked Mesdames O. M. Marchman, H. Leslie Moore, S. F. Harrington, Cecil O. Patterson, G. F. Goff, and Joseph H. McCracken, Jr., all of Dallas, for their courtesy to her and the other Executive Board members in entertaining with a coffee in her honor preceding the meeting. She thanked all members for coming and welcomed them to her home.

The address of welcome was given by Mrs. Goff, and the response by Mrs. Edward C. Ferguson, Beaumont.

Mrs. George Turner, El Paso, extended greetings from the past presidents, fifteen of whom were present.

The President invited Mrs. W. A. Wood, Waco, a past president, to tell of her book of history of the organization. Mrs. Wood spoke briefly, mentioning that the money derived from the sale of her book goes to the Memorial and Scholarship Funds.

Mrs. Joseph B. Foster, Houston, President-Elect of the State Auxiliary, gave the high points of the American Medical Association and Auxiliary convention in Chicago in her report. She stated that it was a pleasure to be a representative from Texas. A fine group of Texans were in attendance and four, Mrs. Frank Haggard, San Antonio; Mrs. Scott Applewhite, San Antonio; Mrs. George Turner, El Paso; and Mrs. S. M. Hill, Dallas, were honored by being named to the National Board. This is an unusual distinction, Mrs. Foster pointed out. Mrs. Haggard was made an honorary life member of the National Board.

The minutes of the Post-Convention Meeting of the Executive Board in Houston, April 29, 1948, were read and after corrections, were approved.

The Secretary read a letter from Mrs. Haggard expressing her appreciation for the corsage presented to her in Chicago by the State Auxiliary.

Mrs. V. M. Longmire, Temple, Treasurer, reported a balance of cash on hand of $2,453.09. Her report was accepted as read. Mrs. Longmire urged that dues be sent in on time. Her full report was filed.

Mrs. Cecil O. Patterson, Dallas, Corresponding Secretary, gave a brief oral report.

Mrs. S. H. Renshaw, Fort Worth, Publicity Secretary, emphasized that all news items should be sent in by the fifteenth of each month if they are to be published in the next month's JOURNAL. She asked all to note the change of address of the State Medical Association offices to 700 Guadalupe Street, Austin.

Mrs. J. C. Sharp, Corpus Christi, Parliamentarian, was introduced.

Mrs. O. W. Robinson, Paris, chairman of Organization, urged the importance of getting every doctor's wife enlisted in the Auxiliary.

Mrs. J. C. Terrell, Stephenville, chairman of Hygeia, gave a brief report of her work.

Mrs. E. W. Coyle, San Antonio, chairman of Program, filed an interesting and informative report for programs and program material, a copy of which had been sent to every county president.

The meeting was modified at this point as the representatives of the State Medical Association who were guest speakers for the afternoon had arrived. Dr. George Schenewerk, Dallas, chairman of the Committee on Public Relations; Dr. Elliott Mendenhall, Dallas, member of the Council on Legislation; Dr. Harold M. Williams, Austin, Secretary-Editor; Joe A. Clarke, Austin, administrative assistant; and Dwight Plackard, Austin, public relations council, were introduced.

Dr. Schenewerk spoke on the purpose and the aim of public relations. He stressed that though clothes, cosmetics, cigarets, food, and jewelry had increased considerably in price, medical service had actually gone down. By illustration he showed that private enterprise on a competitive basis can take care of any phase of economic life better than government control can. He urged that doctors, nurses, hospitals, druggists, and pharmaceutical men show an increased interest in our medical future. Dr. Schenewerk outlined eight specific ways in which Auxiliary members can help the public to a better understanding of public health and of the medical profession.

Dr. Williams described the new offices of the State Medical Association in Austin. He told the Executive Board that beginning in 1949 about $5,500 would come to the Auxiliary each year from the Association, $1 from the dues of each member having been allocated to the Auxiliary by the House of Delegates in April. He stressed the necessity of observing the essentials of a write-up—who, what, when, where, why, and how—in sending news to the JOURNAL and of getting reports in on time.

The President expressed her appreciation of the assistance given to the Auxiliary by Dr. Williams and Miss Harriet Cunningham, Austin, assistant editor of the JOURNAL, and then introduced Dr. Mendenhall.

Dr. Mendenhall spoke briefly on the prospective passage of the Basic Science bill, which is now known as the Minimum Standards bill. He said that every Auxiliary member must inform herself regarding this bill and discuss it in the home and the school to secure its passage.

Dr. Tate Miller, Dallas, President of the State Medical Association of Texas, arrived, and Mrs. Hill introduced him to the group.

Dr. Miller said that the problem of socialized medicine is now out in the open and the situation is serious. He used graphic illustrations to prove that government controlled medicine has proved to be a failure where it has been tried, that public health has deteriorated and actual medical costs have increased while the really ill have been neglected. He suggested that the only way to defeat this program is to enlist the active cooperation and the financial support of the entire medical profession and their families.

Mrs. Hill thanked the gentlemen for their addresses.

The meeting was then resumed.

Mrs. A. B. Pumphrey, Fort Worth, chairman of Legislation, gave her report and insisted that every one be alert to the coming legislation.

Mrs. M. A. Ramsdell, San Antonio, chairman, presented an interesting outline of the work of the Public Relations Committee and suggested a simplified form for discussion in the schools. All of her committee have been active in different phases of this work. Mrs. Joe Bailey, Austin, is clipping chairman. She asked that all Auxiliary members send her every clipping relative to doctors and medicine that they find in papers and magazines.

The chairman of Resolutions, Mrs. P. M. Kuykendall, Ranger, expressed appreciation for the hospitality of the Dallas ladies, the lovely coffee, the courtesy of the doctors in coming to address the group, and the gracious hospitality of Mrs. Hill in entertaining the Executive Board in her home.

The Historian, Mrs. L. B. Windham, Tyler, could not be present but had filed her report.

Mrs. Sam Thompson, Kerrville, offered as a suggestion that on Doctor's Day each Auxiliary should collect 25 cents per person as a contribution to the Library Fund.

Mrs. M. L. Graves, Houston, introduced all five members of the Student Loan Fund Committee.

The Memorial Fund chairman, Mrs. O. M. Marchman, Dallas, reported that her committee could spend $250 per year, and would appreciate the opportunity to help any doctor's wife who is in need.

Mrs. Richard C. Bellamy, Daisetta, member of the Revisions Committee reported that no revisions were being considered at that time.

Mrs. W. A. Wood, Waco, chairman of Archives, asked that reports be standardized and correctly signed.

A member of the Bulletin Committee, Mrs. F. F. Kirby, Waco, announced that the *Bulletin* is still only $1 per year.

Mrs. Max R. Woodward, Sherman, chairman of the Memorial Committee, asked that all memorial material be sent to her.

The Budget Finance chairman, Mrs. H. Leslie Moore, Dallas, was present; she had made her report at the previous meeting.

Mrs. S. F. Harrington, Dallas, chairman of the School of Instruction, said this was the opportunity to tie the past to the present. She urged more time for the School of Instruction.

The Nominating Committee with Mrs. Edward C. Ferguson, Beaumont, chairman, was present but made no report at that time.

The Advisory chairman, Mrs. P. R. Denman, Houston; the Special Advisory chairman, Mrs. W. R. Thompson, Fort Worth; the Postwar Planning chairman, Mrs. W. Frank Armstrong, Fort Worth; and the Resolutions chairman, Mrs. P. M. Kuykendall, Ranger, were present and gave brief oral reports.

In her report, Mrs. Armstrong, chairman of the Postwar Planning Committee, stressed the nurses training program and suggested that auxiliaries help student nurses by practical gifts. Mrs. Emil H. Marek, Yoakum, stated that the DeWitt-Lavaca Counties Auxiliary now has eight nurse recruits.

The Convention chairman, Mrs. B. H. Passmore, San Antonio, reported that extensive plans were under way for the convention and that the San Antonio ladies were eagerly awaiting it.

Six council women were present and gave oral reports. They were Mrs. L. L. Keyser, Fredericksburg, District 5; Mrs. Thomas W. Edwards, Corpus Christi, District 6; Mrs. R. A. Cooper, Austin, District 7; Mrs. Paul B. Stokes, Crockett, District 11; Mrs. Frank C. Hodges, Abilene, District 13; and Mrs. Cecil O. Patterson, Dallas, District 14.

County presidents giving reports were Mrs. B. H. Passmore, San Antonio, Bexar; Mrs. C. D. Stewart, Corpus Christi, Nueces; Mrs. A. H. Neighbors, Austin, Travis; Mrs. Martin L. Towler, Galveston, Galveston; Mrs. Carlos R. Hamilton, Houston, Harris; Mrs. L. R. Byrd, Jr., Port Arthur, Jefferson; Mrs. George M. Hilliard, Jacksonville, Cherokee; Mrs. Howard Bryant, Tyler, Smith; Mrs. H. B. Anderson, Temple, Bell; Mrs. Charles H. Cornwell, Marlin, Falls; Mrs. J. E. Talley, Waco, McLennan; Mrs. J. Franklin Campbell, Fort Worth, Tarrant; Mrs. James P. Bridges, Abilene, Taylor-Jones; Mrs. G. F. Goff, Dallas, Dallas; Mrs. S. H. Watson, Waxahachie, Ellis; and Mrs. James Harris, Marshall, Harrison.

Other county presidents filing reports with the secretary were Mrs. M. M. Ewing, Lubbock, Lubbock-Crosby; Mrs. R. R. Swindell, Amarillo, Potter; Mrs. Thomas L. Fahring, Anahuac, Liberty-Chambers; Mrs. C. F. Neuville, Nacogdoches, Nacogdoches; and Mrs. J. L. Jopling, Paris, Lamar.

The President, Mrs. Hill, gave a brief summary of her work, enumerating some of the things she has accomplished. She stated that she anticipates a busy, progressive year and stressed that it was fraught with great obligations to members of the Auxiliary and their future.

Dr. Williams urged the constant use of *Hygeia* and reported that though the publication is losing money it is still being issued at the direction of the Board of Trustees of the American Medical Association.

There being no further business, the meeting adjourned.

Executive Board members and visiting doctors were guests of the President and Dr. Hill for a cocktail hour and dinner following the meeting. An additional feature of entertainment was a book review, "My Uncle Jon," given by the talented reviewer, Mrs. Herbert Emery, Dallas.

MRS. R. E. CLARK, Memphis,
Recording Secretary.

## AUXILIARY NEWS

**Bexar County Auxiliary** held one meeting during the summer, a joint legislative meeting with the medical society, for which chairmen of the committees for the day were Dr. J. B. Copeland and Mrs. Asher McComb. Auxiliary members assisted in making donations for the Lighthouse for the Blind and were active in a citywide garbage clean-up campaign during the summer.

The first autumn meeting of the auxiliary was October 8 at the San Antonio Country Club. Mrs. S. M. Hill, Dallas, the state President, was guest of honor. Chairmen were Dr. C. B. Alexander and Mrs. B. H. Passmore. Hostesses were Mesdames Frank Steed, Charles Tennison, Adolpho Urrutia, and Alfred H. Hill.—Mrs. C. C. Shotts.

**Cass-Marion Counties Auxiliary** met September 15 in Atlanta with the medical society for a chicken barbecue supper at the home of Dr. and Mrs. Ernest Grumbles. Following the social, a business meeting was held.—Mrs. J. M. DeWare III, Publicity Chairman.

**El Paso County Auxiliary** entertained with a barbecue August 18 in El Paso, honoring the husbands and children of the members. Supper was served on the lawn of the home of Dr. and Mrs. Orville Egbert, with Mrs. Russell R. Deter in charge of arrangements, assisted by Mesdames Edmund P. Jones, B. Lynn Goodloe, Celso C. Stapp, and Dr. and Mrs. Egbert. The 150 guests were greeted by Mrs. E. G. Causey, chairman of the courtesy committee; Mrs. H. H. Varner, president; and Mesdames A. D. Long, James J. Gorman, Louis W. Breck, F. O. Barrett, John D. Martin, and C. C. Boehler. Mrs. Leigh E. Wilcox was in charge of music for the evening.

## DEATHS*

**Dr. Marvin Lamb**, Jacksonville, Texas, died of pneumonia September 6, 1948.

Born October 11, 1904, in Delta County, Texas, Dr. Lamb was the son of Mr. and Mrs. Hadie Lamb. He was graduated from Cooper High School, attended Austin College in Sherman, and did premedical work at Baylor University, Waco. He was graduated from Baylor University College of Medicine, Dallas, in 1935. Dr. Lamb served an internship at St. Paul's Hospital, Dallas, and then practiced for eight months in Bonham before serving for a year on the staff of the Tyler Civilian Conservation Corps camp. Since 1938 he had been associated with the Travis Clinic, Jacksonville, specializing in obstetrics.

Since 1938 Dr. Lamb had been a member of the Cherokee County Medical Society, Eleventh District Medical Society, State Medical Association, and American Medical Association. He was president of the Cherokee County Medical Society in 1946. He was a member of Phi Beta Pi medical fraternity and of the Methodist Church.

On March 22, 1935, in Sherman, Dr. Lamb married Miss Lola Yett of Jacksonville. He is survived by

DR. MARVIN LAMB

his wife; a daughter, Lynda Marcile; a son, Marvin Lee; his parents, Mr. and Mrs. Hadie Lamb, Cooper; four sisters, Dorita Lamb, Dallas; Joyce Lamb, Jacksonville; Lilia Lamb, San Antonio; and Mrs. Jim Bleything, Doddridge, Ark.; and two brothers, Bill Lamb, Dallas, and Paul Lamb, Jacksonville.

**Dr. Eduard Rischar**, Cameron, Texas, died August 1, 1948, of a heart ailment.

A native of Bavaria, Germany, Dr. Rischar was born May 30, 1872. He came to America with his family when he was 8 years old, and lived in Illinois. He received his early education in Quincy, Ill., and at Quincy College. He was graduated from Keokuk Medical College of Physicians and Surgeons, Keokuk, Iowa, in 1900. After serving an internship in the Polyclinic Post Graduate School of Medicine and Surgery in Chicago, he was assistant in clinics and surgery for the next six years. He was an instructor in operative surgery there until 1914, when he came to Cameron to establish with Dr. W. R. Newton, Sr., the Cameron Hospital. After the death of Dr. Newton in 1940, Dr. Rischar acquired full ownership of the hospital, and in 1946 he donated it to the Sisters of Charity of the Incarnate Word of the Galveston Diocese. The hospital was renamed the St. Edward Hospital—Rischar Memorial and is being operated by the Sisters of Charity.

A member throughout his residence in Texas of the Milam County Medical Society, State Medical Association, and American Medical Association, Dr. Rischar was president of his county medical society from 1933 through 1937. He was a member of the Twelfth District Medical Society, and Chicago Medical Society, and a fellow of the American College of Surgeons. He was an active Catholic layman and member of the Knights of Columbus. He was prominent in the rebuilding of St. Monica's Church after it was destroyed by fire, and among his other gifts to the church was a pipe organ. Dr. Rischar was a competent musician, having studied music as well as medicine in various European centers, and in his younger days he played the flute

*An obituary ordinarily will not be published more than four months after date of death. Cooperation in reporting deaths of physicians and in furnishing appropriate biographical material promptly is solicited.

with symphony orchestras and for chautauqua programs.

Dr. Rischar is survived by two brothers, Ernest Rischar, Cameron, and Albert Rischar, Quincy, Ill., and two sisters, Mrs. Dan Legacy and Miss Malchin Rischar, both of Cameron.

**Dr. James Wilson Rollo,** Lubbock, Texas, health officer for the past twenty-three years, died August 18, 1948, of heart disease.

The son of James and Jane (Beveridge) Rollo, Dr. Rollo was born June 25, 1883, at Streator, Ill. After attending high school there, he moved in 1900 with his family to Oklahoma Territory, where his parents filed a homestead claim. He attended the University of Oklahoma, Oklahoma City, from which he received a doctor of medicine degree in 1913. He later did postgraduate work at the University of Chicago. He began the practice of medicine in Shattuck, Okla., but his career was interrupted by

DR. JAMES W. ROLLO

World War I, during which he served as a lieutenant in the Army Medical Corp. After the war he returned to Shattuck, where he continued in practice until 1924, when he moved to Lubbock. A year after his arrival in Lubbock he was appointed city health officer. He was also local surgeon for the Atchison, Topeka and Santa Fe Railroad, and carried on a private practice.

Dr. Rollo was a member of the Lubbock-Crosby Counties Medical Society from the time he moved to Lubbock and was also a member of the State Medical Association and American Medical Association. He was a member of the Presbyterian Church, Masonic Lodge, Kiwanis Club, American Legion, and board of the Lubbock County Tuberculosis Association.

Surviving Dr. Rollo are his wife, the former Miss Lillie Bell, whom he married December 20, 1905, in Gage, Okla.; and two sons, Dr. K. B. Rollo, San Antonio, and C. J. Rollo, Houston.

**Dr. Ernest Rose,** San Marcos, Texas, died August 22, 1948, in Brooke General Hospital, Fort Sam Houston, following an operation for brain tumor.

Born September 19, 1899, in Dexter, Texas, Dr. Rose later moved with his parents, Mr. and Mrs. A. C. Rose, to Thackerville, Okla. He received his preliminary education in Thackerville and attended Southeastern State College at Durant before securing a bachelor of science degree from the University of Oklahoma at Norman in 1934. He obtained his doctor of medicine degree from the University of Oklahoma School of Medicine, Oklahoma City, in 1936, and did postgraduate work in obstetrics and gynecology at Tulane University, New Orleans, and the University of Texas Medical Branch, Galveston. Prior to the completion of his medical education, Dr. Rose taught school in Oklahoma for three years. In 1936-1937 he served an internship at Oklahoma City General Hospital (now Mercy Hospital), and then he practiced for five years in Sulphur, Okla., before being commissioned in the Army Medical Corps for service in World War II. During and immediately following World War I, Dr. Rose served as an enlisted man in the Navy, but in World War II he was commissioned a captain in the Army in

DR. ERNEST ROSE

1942, and after serving as chief of the out-patient clinic and receiving office of the regional hospital at Camp Swift, Texas, he was discharged in 1946 as a lieutenant colonel. After the completion of his military service, Dr. Rose practiced in San Marcos until shortly before his death.

During his years of practice in Oklahoma, Dr. Rose was a member of the American Medical Association through the Oklahoma State Medical Association and Murray County Medical Society. After locating in San Marcos, he was a member of the State Medical Association and Hays-Blanco Counties Medical Society. He had been vice-president of the Murray County Medical Society, and secretary of the Murray County Tuberculosis Association and Infantile Paralysis Association. He was a medical examiner for Selective Service during the early months of World War II. He was a member of the Methodist Church, Masonic Lodge, and Kiwanis Club.

Dr. Rose married Miss Helen Landrum in Gainesville on December 23, 1923. He is survived by his wife; a daughter, Miss Rose Marie Rose, San Marcos; his mother, Mrs. A. C. Rose, Thackerville, Okla.; three brothers, Cecil Rose, Ringling, Okla.; Val Rose, Buhl, Idaho; and Charlie Rose, Thackerville, Okla.; and two sisters, Mrs. H. A. Thompson, Iowa Park, Texas, and Mrs. Ralph Wiseman, Thackerville, Okla.